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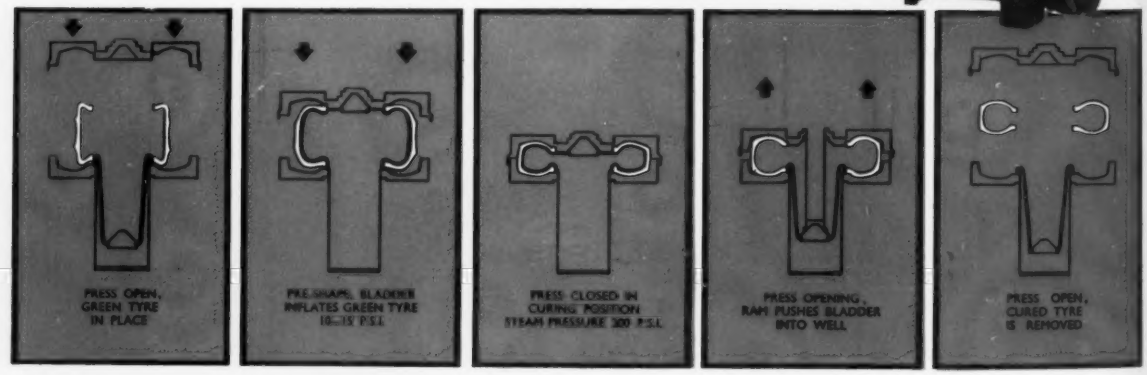
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IN ITS 75th YEAR

February 28 1959

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NOTES of the WEEK

Restrictive Practices

ALMOST three years ago the Minister of Labour asked the National Joint Advisory Council to consider the question of ' practices which impede the full and efficient use of manpower.' A week or so ago the Council published a report on its examination into restrictive practices. For the purposes of the examination the term ' restrictive labour practices ' was defined as those practices or extensions of practice which go beyond what is necessary for the reasonable protection of workers. The most interesting, and encouraging, feature of the report is that it reveals as fallacious the impression, held quite widely, that British industry is riddled through and through with restrictive practices dourly maintained by trades unions in the short-sighted belief that their members benefit even though others may suffer.

No Real Difficulties

INFORMATION in the NJIC report into restrictive practices was based on enquiries undertaken jointly by employers' organizations and unions and covered, to the date of the report, 112 industries. Broadly, the replies fell into three categories: industries which reported that they had no problems in regard to the efficient use of manpower; industries which had set up machinery to deal with any problems, or which appeared to be about to do so; and industries which for various reasons had so far been unable to undertake joint examination. Coming within the first category were 64 industries; into the second, 42 and into the third, six. The council says that it has been a source of some satisfaction to learn ' that so many industries felt able to report that they were meeting no real difficulties in their efforts to ensure that manpower was efficiently used.' But, it adds, the position is rather different in relation to those industries which have set up machinery to deal with any problems or which appeared to be in process of doing so. While the existence of satisfactory joint machinery must give some measure of reassurance, much will depend on the use which is made of it in resolving problems which are likely to persist in at least some of the industries concerned.

Time and the Telephone

NAMES from A to Z are, of course, set out in the standard directories in strictly alphabetical order: ' Smith, A. B.', ' Smith, A. C.', and so on. Delay in turning up a particular Smith (or Jones, Brown or Robinson) sometimes occurs when he happens to have a first name that is more usually a surname and spells it out fully, so that one always thinks of his firm as say, ' Seymour Smith & Co.', when, Seymour being his first name, he should actually be looked for under ' Smith, S.' That, however, does not happen very often, and a commoner source of delay is where an association or society has a lengthy title which includes words like ' Incorporated', ' Federated ', or ' Amalgamated '. There are inevitably cases—take, for instance, something like the ' British Brotherhood for Building Bigger and Better Battleships for Bishops to Bless '—which are liable to baffle both compiler and searcher. A more simple example was described recently by a newspaper correspondent who wished to contact an organization whose ' title for short ' is ' I.F.A.B.S.M.G.B.I.'—and eventually found them in the phone book under ' B '—B for Boot (The Incorporated Federated Associations of Boot and Shoe Manufacturers of Great Britain and Ireland). That is the correct place for them according to the established indexing system, but it is, perhaps, just a question whether some time might be saved if all the Incorporateds, Federateds and Amalgamateds, etc. were placed instead, in all directories, under 'I,' 'F,' 'A,' or as may be, in the same strict alphabetical order of ' Incorporated Advertisers', ' Incorporated Bakers ', and so through the entire list.

High Density Honey

AMONG the innumerable new uses for plastics is the making, so it is said, of honeycombs from polythene. The plastic combs are sprayed with a special scent which, apparently, makes the poor little buzzers think they have themselves made the combs. Object of the exercise is, of course, to present the bees with a ready-made comb and so save valuable production time: a laudable move in keeping with the spirit of the age. There appears to be but one small snag. Because the artificial comb is fractionally thicker than the genuine bee-made job, the bees take about a week to accustom themselves to it. Efforts are now being made to produce a comb from thinner sections of polythene. Additional advantages, besides the time-saving aspect, are that the polythene combs can be taken from the hive, emptied, cleaned and replaced. As long as the bees go on making the real thing and do not start turning out high density honey, the idea seems to have possibilities.

NEWS *Briefs*

US POLYPROPYLENE — AUSTRALIAN SYNTHETIC RUBBER — JAPANESE/MALAYAN TRADE — FRENCH CAMEROON EXPORTS—MARSEILLES SR FACTORY

●**United States** — The American Viscose Corporation and the Sun Oil Co. announce they have formed a new jointly-owned concern to make polypropylene. The new company, called Avisun Corporation, will turn out the plastic in facilities leased from Koppers Co. in Port Reading, New Jersey. The facilities should be in production by mid-summer. Planned capacity is 20m. lb. yearly.

●**French Cameroons**—The value of rubber exports from the French Cameroons during the second quarter of 1958 was Frs. CFA 52m. This compares with Frs. CFA 116m. in the second quarter.

●**Australia**—Consumption of natural rubber in Australia would not be affected by a synthetic rubber plant to be built at Altona, near Melbourne, Mr Neil Douglas, Australian manager of the Natural Rubber Development Board said in Melbourne recently, after the announcement of plans to spend £A23 million on four chemical plants which will produce raw materials for a wide range of plastics and synthetic rubber materials. The main plant will be Standard-Vacuum's refinery at Altona. Mr Douglas said synthetic rubber, mostly imported from the United States and Canada, was mainly used by the motor tyre industry. Australian industries would consume about 34,000 tons of natural rubber this year. Australian consumption of all synthetic rubbers was about 16,000 tons last year. He said that in 1958 for the first time for many years, natural rubber was cheaper than synthetic.

●**United States**—The Firestone Tire and Rubber Co. is producing a new premium passenger tyre price 15 to 20% below the Firestone 'Suprem' its previous premium line, which is being dropped. The company is also planning a new plant at Orange (Texas) for initial production of diene (polybutadiene) rubber. The plant is designed to permit, with some modification, output of coral (polyisoprene) rubber.

●**France** — A French company, Société des Elastomeres de Syntheuse, to build a 500,000 tons annual capacity butadiene-styrene synthetic rubber plant at the Berre Lake, near Marseilles, is being formed by Shell Produits and Chemiques et Raffineries de Berre (both belonging to the Shell-Royal Dutch group), Cabot Texas Butadiene (which will provide the technical process), and the three French tyre manufacturers, Michelin, Dunlop, and Kleber-Colombes.

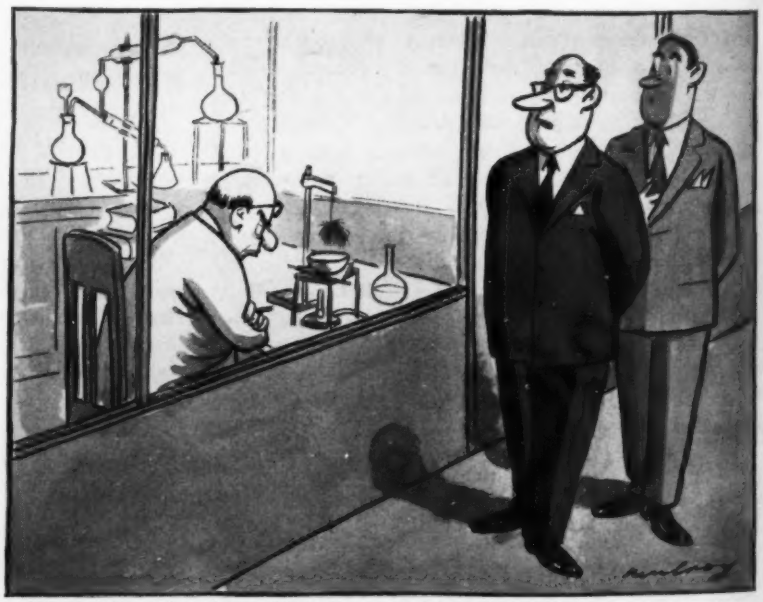
●**Malaya**—A Japanese company is planning big increases in two-way trade with Malaya. Mr S. Morikawa, a director of Toya Menka Kaisha Ltd., said recently that the firm would buy among other things, 20% more rubber from Malaya this year. Japan's expanding tyre industry would mean bigger rubber purchases from Malaya this year, he added.

●**United States**—Total US chemical plant construction for the production of synthetic rubber is scheduled at 53,523,000 dollars for the three-year survey period of 1958/1960, according to the Manufacturing Chemists Association Incorporated in Washington. The Association said recently that 24,523,000 dollars of synthetic rubber plant construction was completed last year while 29 million dollars of additional synthetic rubber plants were under construction and scheduled to be completed before 1961.

HAPPY BIRTHDAY

Birthday greetings to Miss C. H. Chenhalls (FBRAM) and Mr C. H. M. Baker (Firestone Tyre and Rubber Co. Ltd.) for March 2; Mr G. Martin (chairman of Council, IRI) March 7; Mr T. L. Garner (Precision Rubbers Ltd.) and Mr A. E. Marsh (David Marsh (Manchester) Ltd.) March 10; Mr Fordyce Jones March 11; Mr J. H. Scholfield (L. Rees and Co. Ltd.) March 12; Mr F. B. Shaw (Francis Shaw and Co. Ltd.) March 13; Mr C. D. Mitchell (manager, synthetic rubber plant, Fort Dunlop) March 14; Mr S. B. Turner (Expanded Rubber Co. Ltd.) and Mr J. P. Griffiths (Fireproof Tanks Ltd.) March 15; Mr D. P. G. Moseley (David Moseley and Sons Ltd.) March 17; Dr W. J. S Naunton March 22; Mr A. Cooper (technical director, Expanded Rubber Co. Ltd.) March 24; Mr Warren S. Lockwood March 27; Mr S. G. Loe (secretary, RABRM) March 28; Mr E. A. Murphy (Dunlop Rubber Co. Ltd.), Miss D. R. Dawson (librarian, RABRM) March 29; Mr F. A. Turner (A. G. Spalding and Brothers Ltd.) March 30; and Mr T. E. H. Gray (Central Research Division, Dunlop Rubber Co. Ltd.) March 31.

∴Duly authenticated dates for inclusion in this feature will be welcomed by the Editor.



'We, at Shawbury, have high hopes of Podnoddy. He has a theory that baldness can be attributed to the wearing of leather soles.'—428

Small Mill Safety

'ROSS-WARNE' MILLS REDUCE OPERATING DIFFICULTIES

By JOHN B. YOUNG, A.M.I.Mech.E.

THIS method of increasing the number of operators able to work a small diameter two roll mill in safety was disclosed in the theoretical article by Mr G. A. O. Ross, Group Chief Engineer of Wm. Warne (Holdings) Ltd., 'Safe Working on Small Diameter Two Roll Mills' (RUBBER JOURNAL, May 26 1956, pp. 620-22) and it should be clearly understood that the Ross-Warne Principle is freely available to all who care to use it. The method has been mentioned in H.M. Chief Inspector of Factories Report 1956 and is described and illustrated with excellent diagrams in H.M.S.O. publication 'Accidents' Vol. 29, pp. 27-29.

The prototype Ross-Warne mill has proved entirely successful over a period of thirty-five months' continuous operation and it is felt desirable to publish the full details of the practical application of this method of safeguarding small mills.

The Problem

Horizontal two roll mills of 16in. diameter and greater can be satisfactorily safeguarded by fitting sensitive safety bars in accordance with the principles propounded by Mr R. W. Lunn and endorsed by the NJIC No. 1 Mill Committee Report 1953 and detailed in the NJIC publication 'Safe Working on Horizontal Two Roll Mills' 1952. The same principles have been applied to rolls of smaller diameter (down to 12in. diameter) but, since the available area of roll working surface is less, the 'accommodation' is correspondingly reduced. This means that all operators must have exactly the same effective reach to enable them to operate the machine.

For example Fig. 1 shows the normal operator allocated to a standard 30in. x 14in. x 14in. single geared horizontal two roll mill. If this man is absent then, unless the available substitute has almost exactly the same effective reach, he will not be permitted to use the machine because either he cannot reach the roll or he can reach past the safety limit. (This point is clearly illustrated in Fig. 2—note the white line painted across the roll to indicate the safety limit).

In these circumstances the mill has to be put out of action until the welder and fitter have altered the location of the Lunn Principle sensitive safety bar (and tray) to suit the substitute operator.

The Answer

If the common axis of the rolls is inclined at 30° in accordance with the Ross-Warne Principle then the available front roll working area is greatly increased. This is illustrated in Figs. 3 and 4 which show that both the normal operator (a short-reach man) and his substitute (illustrated in Figs. 1 and 2 respectively) can be permitted to use this mill as neither of them can reach the safety limit on the Ross-Warne mill. All the foregoing illustrations have been taken from the rear of the machine in order to show the position of the operators' finger tips relative to the safety limit. Figs. 5 and 6 were taken with the mill running and show that:—

1. There is no need to alter the position of the Lunn Principle Sensitive Safety Bar.
2. Both men have a more comfortable working position (or stance) than before.
3. Cutting-off is an easy operation for both men.

There are more than 40 mills in the Barking factory of Wm. Warne and Co. and it has been found that all of the operators can work on the prototype Ross-Warne mill in comfort and safety *whereas all similar horizontal mills of the same diameter in the factory are restricted to groups of two or four operators.*

Ross-Warne Mill No. 1

In order to test the idea quickly and cheaply an old Robinson Washing Mill was used as shown in Fig. 11. The operator stands adjacent to

Figs. 1 and 2. Short and tall operators on a standard 30in. x 14in. x 14in. single geared horizontal two roll mill. The tall operator can reach well beyond the safety arrow

the higher roll. The rear roll is fitted with a full width scraper knife and is completely fenced in with a hinged door interlocked with the motor starter so that the action of the opening of the door disconnects the supply to the motor and applies the brake. As the original washing mill frame was used the nip adjusting screws are located at the rear of the mill so the scraper knife was made readily adjustable. The whole mill was mounted on a robust fabricated steel bedplate in turn supported on a suitable number of properly disposed BTR Vibro Insulator mountings as the excavation of concrete foundations was considered undesirable. A further feature of this prototype mill is the support of the BTR Vibro Insulators on simple cast iron pedestals leaving a ground clearance of 14in., enabling the whole area beneath the mill to be cleaned easily, eliminating wastage and fire hazards.

Warming

Mr F. W. Goldsmith, under whose direction the prototype Ross-Warne mill was tested at Wm Warne and Co. reports that the Ross-Warne mill has been found ideal for this duty.

The stock is fed in from the front in the usual way and the operator can reach the stock easily as it comes through the nip *towards* him. This enables him to bring the stock round the front roll to join up without:—

1. undue reaching
2. any part of his body being beneath the roll.

If the stock adheres to the rear (lower) roll then it is automatically removed by the rear scraper knife and a simple wooden rake is provided to enable the operator to pull the stock forward in the tray for further work.

Mixing

As shown in Fig. 10 a mirror is placed at the rear of the mill to allow the operator to observe the rolling bank of material in the nip (although many people do not consider this necessary, see R. W. Lunn, RABRM Journal of Rubber Research 1950. XIX, 6, 67, *Safe Working on Horizontal Two Roll Mills*, etc.). The man quickly becomes accustomed to this method of operation. The scraper knife on the top of the rear (lower) roll deflects the ingredients into the nip and is essential if a considerable quantity of powder is to be incorporated.

Ross-Warne Mill No. 2

In 1957 after nine months experience on the prototype Ross-Warne mill a small horizontal mill was converted to the Ross-Warne design as illustrated in Figs. 7, 8, 9 and 12, which show the following differences from the prototype:—

1. Positive roll adjustment at the operating side on the front upper roll.
2. Bull wheel on fixed lower rear roll.
3. Physical dimensions of existing mill components prevented the use of cast iron pedestals.
4. Fig. 7 shows the accessibility of the front roll and the shape of the front of the bedplate which allows the operator sufficient foot room for comfortable working.
5. The mill tray slopes down from

Figs. 3 and 4. Both short and tall operators, *above left and right*, **can operate the Ross-Warne Prototype Mill in safety. Figs. 5 and 6. The same operators,** *below*, **cutting off from the mill**

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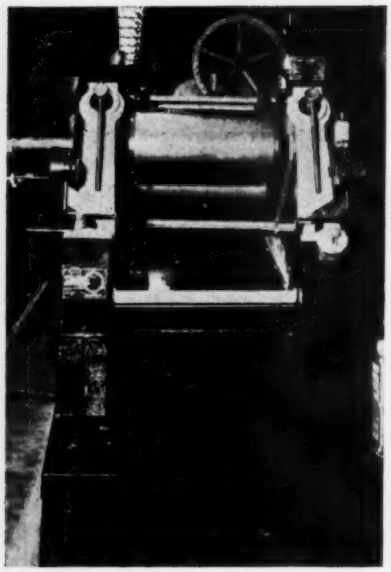
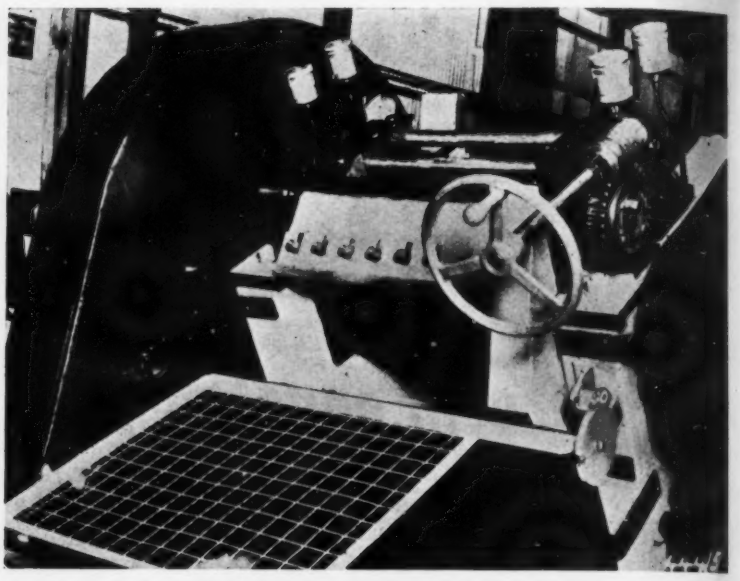




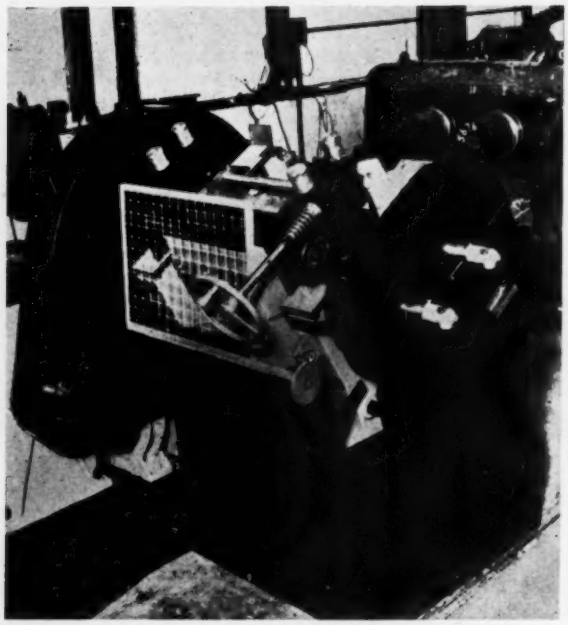


Fig. 7. Front view of the Ross-Warne Mill No. 2, *above left.* **Note how readily the rear roll can be seen and the degree of illumination of the tray. Fig. 8. Close-up rear view of the mill,** *above right,* **with the hinged door open. A cam plate on the door hinge shaft prevents the interlock switch from being closed. The action of opening the door stops the motor and prevents it from being re-started until the gate is closed. Fig. 9. Hinged door interlock shown in the closed position,** *below left.* **Fig. 10. A mirror is placed at the rear of the mill,** *below right,* **to allow the operator to observe the rolling bank of material in the nip**

the rear of the mill towards the operator to assist the movement of material that falls into the tray and this also increases the illumination of the tray considerably (see Fig. 7).

6. Fig. 8 shows a close-up of the rear door showing in detail the method of interlocking the switch roller with a simple plain disc and single notch cam welded to the axle of the guard door. As shown the motor cannot be re-started until the switch roller is allowed to move forward into the notch and this can only be accomplished when the door is fully closed as shown in Fig. 9. In this connexion it is perhaps as well to point out that if the cam had been of the simple disc and single projection type then it would have been possible to move the switch roller (by some external means such as a screwdriver) with the door open.

Anti-Vibration Bedplates

Both of the above mentioned mills were mounted on robust fabricated steel bedplates supported on BTR Vibro Insulator anti-vibration mountings. This form of construction has the following advantages:—

1. Vibration is not transmitted to the surrounding floor or building structure.
2. The foundation cost is negligible as the floor merely has to support the dead weight load and does not have to withstand the stresses normally imposed on the concrete foundation slab

Continued on page 328

Large Injection Mouldings

EKCO INSTALL NEW WINDSOR MACHINE

THE largest injection moulding machine built in the UK was recently installed in the Southend Works of Ekco Plastics Ltd. With this installation, which occupies a new extension to the factory, Ekco Plastics become the only firm in the UK capable of producing injection mouldings in thermoplastics weighing up to 12lb. or more.

Designed and built by R. H. Windsor Ltd., the machine, the AP 335, weighs 73 tons and is now moulding complete refrigerator liners of 3½cu. ft. capacity for Frigidaire's new model MZ-33, announced last Monday. The liners are made in BX polystyrene with a shot weight of 104oz., producing a moulding of approximately 6lb. weight measuring overall 26¾in. x 19⅜in. x 14in. The mould itself weighs 7½ tons.

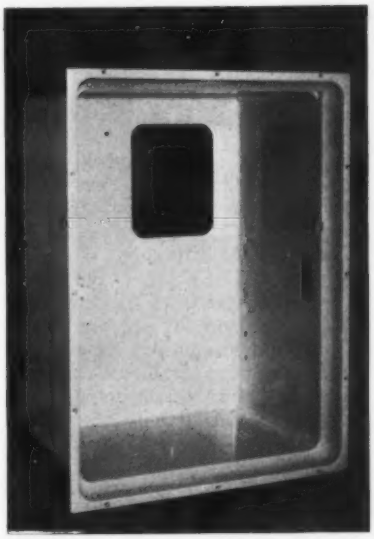
Fitted with the Windsor Co.'s Autoplas pre-plasticizing unit, this machine has a plasticizing capacity of 420lb. of polystyrene per hour calculated on the continuous rating of the pre-plasticizer. The swept volume of the injection stroke is 335 cu. in. of plastic material or approximately 210oz. of polystyrene.

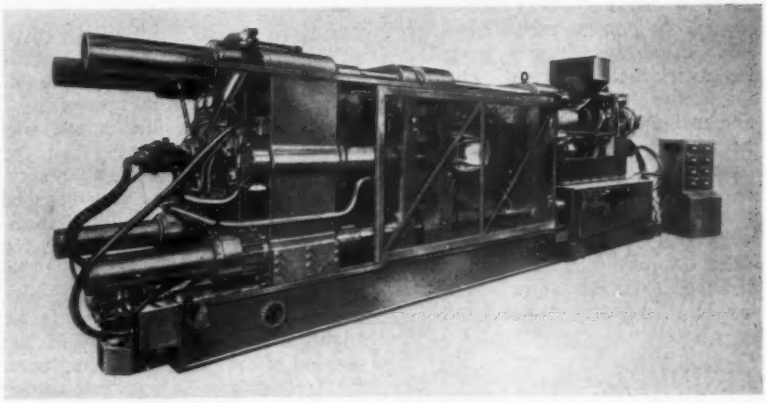
The specification of the AP 335 machine is as follows:

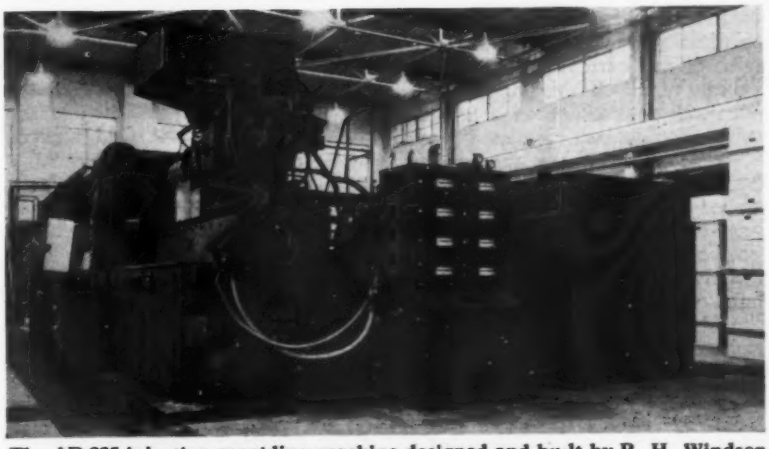
Capacity (dependent on material and mould construction): The swept volume of the injection stroke is 335 cu. in. (5,480 cm.³) of plasticized material—approx. 210 oz. (5,953 gr.) polystyrene. Plasticizing capacity per hour (calculated on the continuous rating of the pre-plasticizing unit): 420 lb. of polystyrene. Diameter of injection plunger: 5 in. Area of injection plunger: 19.635 sq. in. Total load on injection plunger: 245,440 lb. Pressure on plasticized material: 12,500 psi. Stroke of injection plunger: 17 in. Speed of injection plunger: 315 in./min. Time for complete injection stroke: 3½ sec. Capacity of hopper: 22,100 cu. in.—approx. 480 lb. polystyrene. Locking force: 1,150 tons. Tie bar centres: 56 in. V x 48 in. H. Distance between tie bars: 48½ in. V x 40½ in. H. Size of mould plates: 70 in. V. x 62 in. H. Max. mould sizes: 40 in. x 70 in. V, 62 in. x 48 in. H. Mould opens: 42 in. Combined mould thickness: Max. 44 in., min. 12 in. Mould adjustment: 32 in. Max. daylight: 86 in. Total heating: 53½ kW. Motors—h.p. and r.p.m.: 150 x 720 and 25 x 720. Pumps used: Vickers-Armstrong VSG 12/2,000 at 92 gal./min., 2,000 psi max.; Vickers-Armstrong VSG 6/2,000 at 48 gal./min., 2,000 psi max.; Vickers-Armstrong VSG 3/3,000 at 16 gal./min., 3,000 psi max. Overall approximate weight: 73 tons (total). Overall machine dimensions—base and injection unit (approx.): 33 ft. x 6 ft. 8 in., including all projections. Power unit (minus starting gear) (approx.): 16 ft. x 6 ft. 7 in.

In their announcement on Monday Frigidaire stated that they had carried out considerable experiments with plastics materials with a view to producing a superior quality interior liner for their household refrigerators. As a result, the injection moulding process was decided upon as by this means only was it possible to avoid the considerable variations in thickness experienced in other techniques and to produce a liner which not only had uniform strength throughout but also rigidity, high finish and durability. Equally important for their purposes was the fact that time and labour occupied by other processes necessary after steel pressing would also be avoided by injection moulding.

In addition to the liner, Ekco Plastics make a number of other components for the new refrigerator. These include the door liner, vacuum formed in high impact polystyrene; the fronts to the door shelves; the evaporator door and matching drip tray; plugs to cover the screw holes on the liner; the cold control knob escutcheon and button and, made from polythene, a dished coverplate at the back of the freeze unit. The main external door handle is moulded from proprionate.







The AP 335 injection moulding machine designed and built by R. H. Windsor Ltd., installed at the Southend works of Ekco Plastics Ltd. It is now moulding complete refrigerator liners (*top*)

Dielectric Properties and Structure

ELECTRICAL PROPERTIES OF HIGH POLYMERS—4

THE fourth lecture in the evening course entitled the 'Electrical Properties of High Polymers' at the National College of Rubber Technology was given on January 7. The lecturer was Mr W. Reddish, of Imperial Chemical Industries Ltd., Plastics Division, Welwyn, and his subject was 'Dielectric Properties in Relation to Structure of High Polymers.' The object of the lecture was to describe what happens when a high polymer is electrically disturbed, and to consider the attempts to correlate the data obtained from electrical measurements with the structure of the high polymer molecule.

Mr Reddish started by emphasizing that he was going to talk about measurements taken only when the polymer was subjected to a low electrical stress. Under these conditions, the current produced by the low voltage was linearly related to the electric field strength. This was not always true for high polymers. The assumption was also made that the material under investigation was isotropic. In the case of alternating voltage measurements, interest was in the permittivity and loss factors, whilst for direct electrical stress interest was in the resistivity of the material. This last term was not as simple as might appear at first sight.

Leakage Value

When a direct voltage was applied to a high polymer, there was a sudden rise of current due to the polarization effects, and then the value of this current dropped to the leakage value. If this leakage value remained constant, then the resistance could be calculated from $R=V/i$, where 'i' was the constant current. If, on the other hand, 'i' gradually decreased with time, as was often the case, it was not possible to talk about the resistivity of the material, as R approached an infinite value. In this case $R=E/j$ should be used as a measure of the resistance, where 'E' was the field strength, and 'j' the varying current density. This fact that a polymer might not have a resistivity in the usual sense of the term often led to difficulties in specifications, but was something which had to be accepted as being intrinsic in the nature of the material.

A consideration of the dielectric properties of high polymers was dominated by two factors, which were (a) the polarity of the molecules, and (b) the molecular mobility. The role of these two factors was discussed at length by Mr Reddish. He compared the dielectric properties of a non-polar molecule such as polythene with those of the very polar polyvinyl chloride. The non-polar materials had a permittivity, he said, which did not vary with frequency and was equal to the square of the optical refractive index n^2. In the case of polar materials, the optical value might be regarded as a base or datum level for the permittivity, upon which was added the effects due to polarization. For this class of material, the permittivity started by being much higher than n^2, and gradually approached this value as the frequency increased. This high value of the permittivity was caused by the dipoles and was due to some factor other than the polarization alone, such as mobility. The effects of mobility were brought out if the temperature of the specimen was varied and the loss factor and permittivity measured. The permittivity would increase with temperature whilst the loss factor might show a maximum value, the position of the peaks depending upon the frequency. At low frequencies the dipoles could follow the electric field variations and this produced the high permittivity of polar materials at low and zero frequency. As the frequency increased, the mobility was not sufficient for the dipoles to follow the field alternations, and the permittivity value gradually dropped as the frequency went up, finally approaching that of non-polar materials, that was, the value of n^2, as optical frequencies were approached. Similarly, as the temperature of the material was decreased, the dipoles become less mobile, and the permittivity value again approaches n^2.

There was complete continuity of the phenomena from the high frequency regions down to zero frequency. This was illustrated by the lecturer who showed a number of power factor-frequency-temperature contour diagrams for various materials. Because of the presence of more than one set of maxima, the Ferry-Fitzgerald transform might not always give a unique result for these materials. In fact, most of the phenomena could be described quite accurately by simple rate equations.

The relationship between the electrical properties and molecular structure was illustrated by the lecturer using the examples of polymethyl methacrylate and chlorine substituted methacrylate. The large change of permittivity on substitution of the chlorine in the polymethyl methacrylate to form polymethyl chloracrylate gives information about the presence of low molecular weight impurities, particularly monomer.

Close Association

There was often a close association between the electrical and mechanical properties of high polymers. Electrical and mechanical transitions might occur at the same temperature, and both involved movements of certain elements in the high polymer chain. The structural unit which took part in the mechanical change must also act as a dipole. For non-polar materials the mechanical losses were a property of the motion of the molecules and could not be detected electrically. A graph showing the variation of permittivity with frequency for Terylene indicated the effect of crystallization in immobilizing the polar groups. Dipole motion could occur even when a material was quite mechanically rigid, which indicated that the meaning of the term rigidity might require further scrutiny.

Finally, Mr Reddish mentioned the effect of oxidation upon the loss factor of polythene. The oxidation might be caused by milling, and it was shown that the loss tangent increased with increasing milling time.

In conclusion it might be said that there was often, but not invariably, a close association between the electrical and mechanical, and hence the structural, properties of high polymers. Similar rate equations governed both electrical dipole orientation and mechanical deformations, and it was possible in some cases to link this correlation to the molecular structure of the polymer.

A factory has recently been opened at Amiens for the production of tyres. Production is expected to reach 4,500 tyres per day by the end of this year.

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Rubber and Plastics in South Africa

NEWS OF FIRMS AND PRODUCTS

THERE is an increasing prospect that in years to come considerable use will be made in Southern Africa of glass fibre as a material in the construction of houses, especially those of the cheaper sorts found in the large schemes for lower-paid workers. Little has been done along these lines so far in South Africa, but a lead has been given by the decision of the Gwelo town council, in Southern Rhodesia, to build an experimental row of such houses, the first six dwellings estimated to cost £372 each. If these houses for Africans prove successful, it is expected that further contracts for such construction will be signed and local authorities in other parts of Africa encouraged to follow this lead.

Todwil Range

The Todwil Company of South Africa (Pty.) Ltd., Todwil House, Bree Street, Cape Town, has now been in existence for nearly nine years, during which time the company has rapidly increased the demand for the rigid sheet plastics in which the use of a new printing technique was introduced to South Africa for the first time. The company is now offering local industries a wide range of plastic products in this class.

Increasing Use of Plastics

Although the past few years have shown a remarkable development in the South African plastics industry, this industry is still dependent on imported raw materials, as there is little production of these raw materials in South Africa and not likely to be for some time yet. Perhaps as a consequence of this, the main South African output of plastics is for the consumer market, in which the manufacturers now face very keen competition. None the less increasing use is being made of plastics in South African industries, and this has encouraged local firms to invest in modern machinery essential in the new fabricating processes.

Glass Fibre Boats

South African Bonded Fibreglass (Pty.) Ltd., Prestige House, Alfred Street, Cape Town, with five different types of glass fibre boat in production, are now perhaps the leading producers of such craft in the Union. Among the popular lines recently put into production is a very small speedboat that is guaranteed to have the durability and strength of rather larger craft built of other materials. Although it only weighs 50lb., it can accommodate three passengers and take a 7 hp outboard motor. It seems to be the answer to many users of South Africa's inland waters who require a small and inexpensive craft. Of the other four types of glass fibre boat produced is the 45lb. canoe known as the Papoose, designed to accommodate two grown men. It is suitable for running with a light outboard motor or with a small sail. This canoe can be ordered in the larger size needed to seat four adults. The company is offering to supply any of its craft in kit form, cut to size, with complete directions for fitting them together. Prices for the kits vary according to the type of craft ordered, but it is no more than £68 for the 10ft., for the Silverfish car-top runabout, and £110 for the 12ft. Swish.

Translucent Sheeting

South African Bonded Fibreglass is also making a corrugated translucent sheeting for use in building. It is said to provide a chosen interior with all the benefits of sunlight without the heat and glare. This fibreglass with this high diffusing property is installed in exactly the same way as corrugated asbestos or corrugated iron sheeting, without the need for frames. The manufacturers state that this fibreglass is equal in mechanical qualities to steel, so that it can be chosen for certain types of roofing in the certainty that it will not crack or fracture, providing full protection from the worst effects of the weather, and at the same time being pleasing in appearance. This product is now being offered in the four pastel shades: blue, pink, lemon and green, or if preferred it can be ordered plain.

Horners Award Winner

PLASTICS 'PHONE KIOSK

THE Horners Award of 1958 for a striking design wholly or mainly in plastics materials has been won by Mr R. E. Facius, of Seaton Street, Chelsea, London, S.W.10, a student at the Central School of Arts and Crafts, for his design of a public telephone call-box, it is announced by the British Plastics Federation. Mr Facius, aged 27, from Perth, Western Australia, and at present in the design department of Halex (British Xylonite Co. Ltd.), Walthamstow, will receive his prize, 50 guineas, at the annual plastics dinner and address of the Worshipful Company of Horners, on whose behalf the Federation organizes the annual Horners Award for young craftsmen (under 30).

Resin glass-fibre mouldings for the two outer shells and a moulding in translucent glass-fibre for the dome-shaped top were features of the winning design, which also included the use of foamed plastics insulation in the cavity walls and thermoplastics floor covering. Better ventilation and ease of maintenance are among advantages claimed.

This year's dinner will be held in the City on March 19. Mr W. Charles Waghorne, a member of the council and a past chairman of the British Plastics Federation, will give the address. Closing date for entries for the 1959 competition is May 29. Regulations are available from the British Plastics Federation at 47/48 Piccadilly, London, W.1.

R. E. Facius with the model of his winning design

Mr Roland E. Bruce has been appointed to the board of Bagan Serai Rubber Estates. He succeeds Mr George R. Roper-Caldbeck who has resigned as a director.

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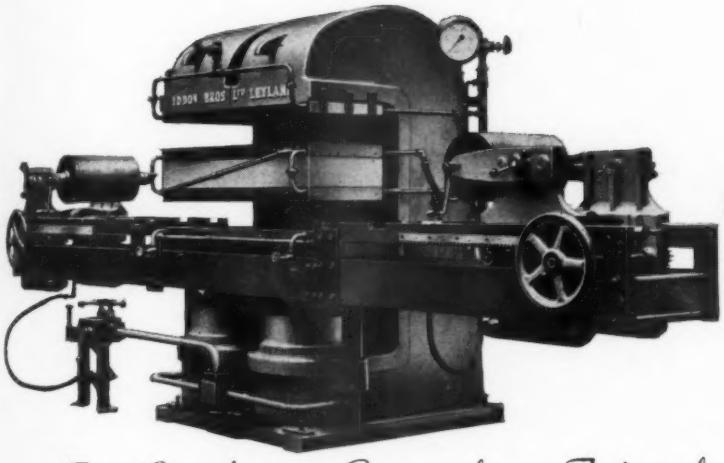

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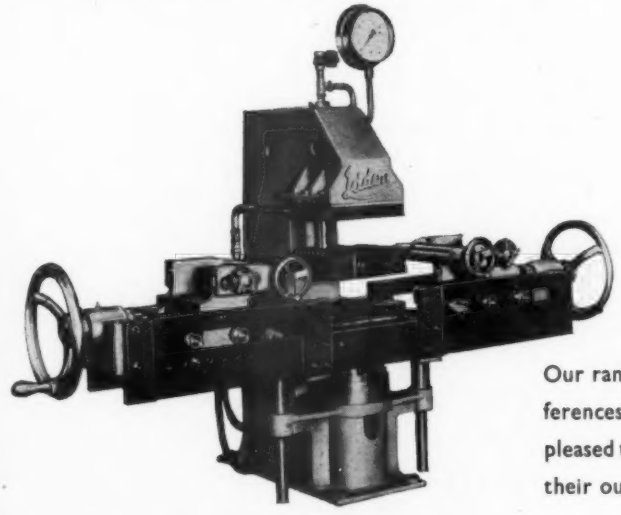

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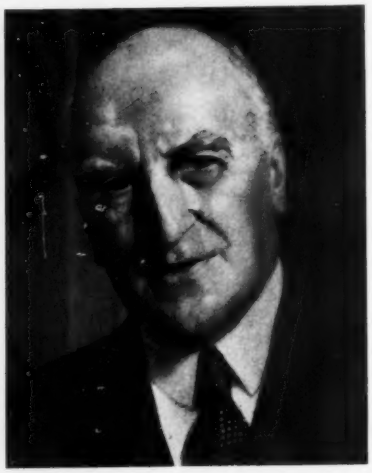
Sir George Beharrell

SIR GEORGE BEHARRELL, D.S.O., chairman of the Dunlop Rubber Company from 1937-49 and president from 1949-57, has died at the age of 85. He was president of the Federation of British Industries from 1932-33 and of the Institution of the Rubber Industry from 1933-36. Sir George Beharrell joined Dunlop in 1922 and became managing director, under the chairmanship of Sir Eric Geddes, the following year. Together the two men reorganized the company, making a number of important changes in its structure.



Above all, they transformed Dunlop, which was at that time primarily a tyre manufacturing concern, into an industrial group, making an immense range of products, many of them quite unconnected with rubber.

In his distinguished career, Sir George held a number of other important positions in industry. He was president of the India Rubber Manufacturers' Association from 1926-28; president of the Society of Motor Manufacturers and Traders from 1927-29; and chairman of the Sixth International Congress for Scientific Management in 1935. From 1934-43 he was a member of the Advisory Panel representing manufacturers on the International Rubber Regulation Committee and in 1941 was appointed chairman of the Rubber Control Board. After the war he represented manufacturers at meetings of the International Rubber Study Group at Washington, London, and The Hague. He became honorary consultant to Dunlop in 1957.

Sir George was an acknowledged authority on transport, and also of civil aviation when, both as a science and as a method of getting about the world, flying was emerging from its infancy. He was a man of prodigious knowledge, and insatiable capacity for work, and yet a man who was never too busy to accept new responsibilities, to probe new ideas, to indulge his recreations, and to cultivate his friends.

He was born at Almondbury, near Huddersfield, on March 11 1873, the son of George Beharrell, a schoolmaster, who died when his son was still a boy. His legacies to his son were a fine character, a mathematical mind, and a head for figures. Young Beharrell first went to King James's School, Almondbury, had private tuition, and eventually found his way to Leeds University, although in the meantime he had started the career, to which he was to return, in the offices of the North-Eastern Railway at York. His first job was in the clerical department, which was given to him at the age of 15, and for which he was paid £15 a year.

After the interruption of completing his education, his progress at York was rapid and spectacular. Because of his flair for statistics, he was given a succession of quick promotions so that at 41, when the 1914-18 war broke out, he was assistant goods manager and commercial agent. His brilliant work in the swift mobilization and dispatch of the men of Northern Command, and his part in producing a complicated railway service for purely military needs, such as the nation had not before known, brought him to the attention of the Government, and particularly of Lloyd George, who in 1915 got him into the Ministry of Munitions as Director of Statistics and Requirements. When he had set the department going, he was sent to France with the rank of lieutenant - colonel as Assistant Director-General of Transportation, working with Sir Eric Geddes and Sir Philip Nash. Not long afterwards, he became Assistant Inspector-General of Transportation in all the theatres of war, and in May 1917 he was transferred to the Admiralty with the rank of Director of Statistics. In fact, he was appointed mainly to deal with the anti-submarine campaign when the German menace to shipping was at its height, to analyse the copious and intricate data at the Admiralty.

Geddes Committee

After the war Beharrell joined the Ministry of Transport upon its formation in 1919 as Director-General of Finance and Statistics, and in 1921 he was attached as financial adviser to the Geddes Committee on National Expenditure. He was with the famous 'axe' committee for something more than a year, until he left the Civil Service to go into business.

Although he ostensibly retired in 1949, Sir George kept up many of his activities. He was fond of his gardens at Harpenden, was an *habitué* of the Reform Club, and would from time to time call in at the Dunlop headquarters in St. James's Street, where his son, Mr George Beharrell, succeeded him as deputy chairman and managing director. Many distinctions were conferred upon him. He received the D.S.O. in 1917 and was knighted in 1919. He had the Order of the Crown of Belgium, was a Commander of the Orders of St. Maurice and St. Lazarus of Italy, and of Orange-Nassau of the Netherlands.

He married in 1898 Kate, daughter of Joseph Ripley, by whom he had three sons and a daughter.

Police Notice

The Criminal Investigation Department of the South Ockendon, Essex, Police has requested publication of the following details of 15 tons of rubber stolen recently:

100 bales of crepe rubber, hessian wrapped, each 200lb. bale marked CWM 131. Total value estimated at £1,800.

68 bales believed to be sole crepe rubber, 168lb. each, unwrapped, valued at £1,400. These bales are marked as follows: PSAC6 170-192 (23), SC10 379-299 (21), TIRAM J 45 6944-6948 (5), OEA 4655143-4655161 (19).

Any information concerning this rubber should be passed to D. V. Birtchnell at South Ockendon Police Station. Telephone No. 3244.

Glass-fibre reinforced plastic mouldings for National Cash Register direct entry accounting machines are believed to be the largest mouldings currently being produced by the preform-matched metal moulding technique, and are manufactured by the Plastics Division of Universal Metal Products Ltd. (UMP), of Salford, Lancs. The material was chosen for its light weight combined with great strength, and its non-corrosive properties

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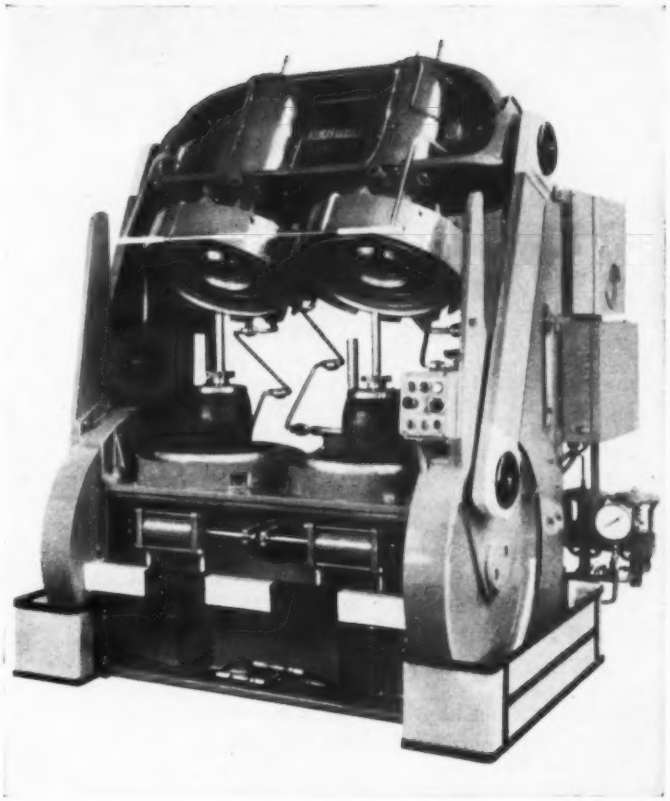

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VIEWS and REVIEWS

The Good Executive

IT seems, according to an informative and suggestive article in a recent issue of *Rubber Age,* entitled: 'How Good an Executive are You?' by Larston R. Farrar (*1959, 84, 456*) that there is a real shortage of executive talent in the great US rubber industry, an industry comprising some 250,000 employees.

The reasons for this immediate shortage are briefly reviewed by the author, but he clinches his main theme by remarking that there never has been a time when the old saying '"There's always room at the top" was more true than right now.'

Overall Definitions

Although the stated US shortage is, naturally, a matter of importance, what we are concerned with here is primarily the qualities which go to the making of a 'top-drawer' executive; or, as Mr Farrar has it: 'the Who, What and Why?'

It seems that there are many definitions in reply. One of these is attributed to Elmer Frank Andrews, 'who once said: "If a man has an office with a desk on which there is a buzzer, and if he can press that buzzer, and have somebody come dashing in response—then he's an executive!"'

If the foregoing corresponds to the attributes of an unqualified executive, a *business* executive has been, according to our author, 'defined in many ways.' However, one definition 'is that he is a man who can make quick decisions that are right—*sometimes.*' Another is that an executive is a man 'who can do a good job of running a business, much against the predictions of people who knew him as a boy.'

Desirable Qualities

Having (broadly) defined your executive, you may want to determine the qualities covered by your definitions, and in this regard you may (as quoted by Mr Farrar) draw Ralph Waldo Emerson into the net. He gave us a clue when he said 'Our chief want in life is somebody who shall make us do what we can. . . .'

Farrar also quotes another of Emerson's sayings in this field, and remarks incidentally, 'and how true it is even today! "that to forge ahead in business, you must make yourself necessary to somebody."'

The Personality

We now come to a list of the characteristics as discussed by our author, 'on which principal management specialists agree as being those necessary in a top executive. . . .' In a very abbreviated form these are:

1. The true executive understands the business in all its phases—his own company, its place in the industry in which it operates, and the latest place in the world. He knows his company's principles, problems and potentials. . . .

2. The man who has the ability to make decisions right or wrong is able to step farther and faster than one constantly hedged in by doubts as to what to do. The man able to make decisions even when there is insufficient data, on the basis of the best available, and of his own common sense and knowledge.

3. He should have a spark of 'divine discontent.' He always wants to improve products and services, and to see the company function better.

4. The man who has 'the spark of executive talent is able to work well with people. This is because (a) he realizes his own advantages and shortcomings; (b) there is sincerity in all he says and does. People co-operate better with a man . . . over or under them, if they believe in his intrinsic honesty.' Whether they agree with him in everything is another question, 'and not too important.' (c) he is able to think co-operatively, and is sufficiently flexible (mentally) to recognize the worth of a suggestion, and to give way to it when appreciated.

5. A good executive must learn how to *grow,* rather than to swell. Thus the waggon maker who pooh-poohed the development of the automobile lived to see how short-sighted he was.

6. A good executive must be dedicated to his job, and such executives 'Never really "get away" from their jobs, even on nominal vacations.' (*Note* by reviewer: I am not sure that this view will be endorsed by all on this side of the Atlantic.)

7-10. A good executive must work, or learn to work co-operatively; can exercise initiative, and consider new ideas—and people. He must learn to speak correctly and effectively. He must learn the amenities of life, and—in the best sense—to be a good 'mixer' with all (from the other directors to the raw recruit).

The Pirelli Story

Having regard to the above note it may not be a bad plan to consider the moral and material influence of good direction in the light of a concrete example. In the present case this is not far to seek inasmuch as in the latest issue of the *Royle Forum* (1958 No. 85) there is an excellent example in an article entitled 'The Pirelli Story.'

This story commences as follows:

> 'Giovanni Battista Pirelli was a young man in 1872 when he established his first factory for the manufacture of sundry rubber products. The beginning was modest with about forty persons being employed, but Giovanni Pirelli was endowed with tremendous drive and under his expert guidance the company began to grow. That guidance was to endure for sixty years and, when the founder died in 1932 the

COMMENT ON SCIENTIFIC AND INDUSTRIAL MATTERS

by **DR SCHIDROWITZ**

fruits of his labours was one of the most important industrial organizations in Italy—The Pirelli Company.'

Electrical Developments

Continuing the story it is noted that the growth and expansion which had manifested themselves shortly after operations had started took a completely unpredictable course in the early 1880's. In view of the introduction of electricity into Italian industry the decision was quickly made to add insulated wire and cable to the company's already growing roster of products.

A feature of this development was the growth over the years 1884-1887 of the submarine telegraph cable industry in Italy 'with the Pirelli organization playing a major role.' It is to be gathered from the article quoted that today the company 'is responsible for the manufacture, laying, and maintenance of the entire Italian submarine telegraph network as well as of other important foreign submarine cable projects.'

This particular feature may be rounded off by the further quotation that 'Pirelli's operations in submarine cable-manufacture, laying, maintenance—are second only to the cable industry in England.'

But it is not in the submarine cable industry alone that the Pirelli firm has become outstanding in the electrical field. I believe it is correct to state that in this field, broadly, Pirelli with its associates has become one of the greatest electrical world enterprises.

This is not the place to go into further details, but it is, of course, well known that in other branches of rubber manufacture, *e.g.* in those of tyres, floorings, mechanicals generally, etc., etc., Pirelli has attained to an eminent position.

In the *Royle Forum* article we find a number of most interesting illustrations relating to, *e.g.* the main factory at Bicocca (Milan) and the various departments manufacturing special and general lines and particularly those relating to cables. At the present time the Pirelli Group in Italy includes a number of companies incorporating 32 factories in which more than 28,000 persons are employed. According to 'the Pirelli story,' the Pirelli Societa per Azioni is the largest of these companies, 'owning and operating 20 factories and employing over 21,000 workers.' Of these the Bicocca works is the largest, covering an area of some 745,000 square metres. The *Royle Forum* article concludes:

> 'There has been a relentless flow of change—economic and technological—during the years since the first small Pirelli factory began operating. That the organization which grew from that beginning met the challenges of those eighty-six years and forged ahead, is a living tribute to the founder.'

And to conclude my discussion as to the importance of superior 'direction' as discussed in the first item of this issue, I might add to the conclusion of the Forum's article (as quoted) the words: and to the consistent and persistent wisdom in direction of those who follow Giovanni Battista Pirelli.

Notes

I have to thank the Esso Petroleum Company for a copy of Vol. II of the *Enjay Butyl Manual*—of which Vol. I was supplied some time ago. In a covering letter it is pointed out that 'in the design of Butyl rubber compounds little comprehensive information is available to indicate the properties conferred by a range of accelerators, carbon blacks, mineral fillers and oils.' In particular, compounders have not been aware of the extensive range of physical characteristics which can now be obtained with Butyl, and this is especially important where Butyl is replacing other polymers whose service performance is assessed by certain physical characteristics. 'It is intended,' the covering letter continues, 'to satisfy this requirement and minimize the time needed for designing and testing butyl compounds.' The 'Manual' is a handsome loose-leaf binder, covering much general and special information re compounding, etc., and 61 Tables. In addition, there is an interesting feature, namely, a special inset in which there is a Classification by Hardness (Shore) covering a large number of figures representing, in addition to Hardness, Tensile, Modulus, Elongation, Compression Set, Tear Resistance, Extrusion Index, Flexometer Temp. Rise, SG, and Pound, Vol. Cost, cents.

I have just received from the Natural Rubber Development Board 'Additional Information Sheet A.' This gives further data on curing of compounds of SP rubber, and supplements information in BRPRA Technical Bulletin No. 2.

'Enjay Butyl No. 6,' forwarded to me by Esso Petroleum Co., is entitled 'Dynamic Properties of Enjay Butyl and Their Applications.' This 15-page folder, with 23 illustrations gives much interesting information especially re preparation of soft rubbers having a high degree of damping. It is claimed that these properties allow of the fabrication of soft articles having a high degree of work absorption and low shock transmission. I have also received 'Enjay Butyl No. 7,' which is entitled 'Enjay Butyl for Use in Appliance Applications' (*e.g.* washing machine hose, boots, gaskets, etc.). Interesting data re compounds, evaluation, etc.

PHILIP SCHIDROWITZ

I.C.I. SILICONES

Two new silicone compounds are being made by the Nobel Division of I.C.I. Ltd. One is a cable rubber, and the other a silicone emulsion. Elastomer E 372 is a 70° shore hardness cable rubber of improved physical properties, particularly in the elongation, which is now 225% after a 24-hours oven-cure at 250°C. Because of its hardness and other good physical properties the rubber is suitable for the sheathing as well as the insulation of cables. It will satisfy an increasing demand for a cable rubber that is capable of indefinitely resisting ambient temperatures as high as 150°C., and as low as −50°C.

Silicone Emulsion M 401 is designed as a release agent in rubber and plastics moulding and in some kinds of metal moulding. It is more stable at higher temperatures than the emulsions at present in use.

Questions Corner—61

(Second Series)

263. Cellulose ethers are used in the food industry. Give some details.

264. There are many factors affecting the choice of stabilizers for polyvinyl chloride systems. What are they?

265. Name some of the factors which affect the strength of fabric based laminates as regards the fabric itself.

266. Is there more than one type of rigid polyvinyl chloride? If so, give some brief details.

(Answers next week)

Answers to Questions Corner—60

259. When the water phase is removed from polyvinyl acetate emulsions, the resin particles tend to pack together and form an apparently continuous film. It should be noted, however, that the film always consists of a matrix of resin particles in which are distributed the protective colloids, emulsifying agents and so on. Film formation is influenced by the particle size and the molecular weight of the resin. Plasticization usually promotes film formation. Mechanical properties are a function of the molecular weight of the resin. High molecular weight generally resulting in high strength. The polyvinyl acetate resin itself is hard and brittle but it can be made flexible and soft by the proper use of plasticizers. The films have good abrasion resistance but indifferent resilience and elasticity. They tend to creep under low stresses.

As polyvinyl acetate is thermoplastic it will soften under heat. The addition of plasticizers lowers the softening point. Polyvinyl acetate is colourless but films deposited from the emulsions will vary in gloss and clarity depending on the particle size, plasticization and drying conditions. The finer the particle size the better the gloss and clarity. Drying at low temperatures may result in opaque films.

Polyvinyl acetate is odourless, non-toxic and tasteless but the addition of certain plasticizers may affect these properties. It will burn when ignited but its flame resistance may be improved by modification with certain plasticizers or inorganic salts. The polymer is insoluble in water but some absorption takes place when exposed to water and opacity and loss of mechanical properties results.

Polyvinyl acetate is soluble in ketones, esters and chlorinated hydrocarbons and lower aromatic hydrocarbons. The polymer is insoluble in ethers and aliphatic hydrocarbons, and resists petrol, paraffin, white spirit, oils, fats and greases.

260. Chemically, metallic soaps are defined as alkaline, alkaline-earth or heavy metal salts of monobasic complex organic acids. The final properties of the soap depend, to a great extent, on the quality of the raw materials used in the manufacture and the number of stearic acid mols. actually in combination with the metal. As stabilizers in vinyl polymers, these soaps are considered to function by reacting with the free hydrogen chloride split off on degradation of the polymer, to form a metal chloride and a weak organic acid. The major part of the mechanism is thought to be due to the metallic cation, but where water resistance, colour and odour are of importance the anion or fatty acid portion of the soap is also important. There is a good discussion of the effect of metallic stearates as stabilizers in PVC in Trans. P.I. 1951, *19* (38), 47. The most popular of these are calcium, barium, cadmium and lead stearates.

Calcium stearate is useful as a heat stabilizer for non-toxic compounds and it also acts as a lubricant.

Barium stearate is also a stabilizer and lubricant and is particularly useful where sulphur staining is to be avoided.

Cadmium stearate is probably one of the best for imparting good all-round stability and 4-8 parts/100 polymer and gives good clarity and heat and light stability.

Lead stearate, both neutral and basic, is extensively used, and, in combination with inorganic lead stabilizers, gives excellent results.

261. There are several troubles that may arise in connexion with the polymerization process known as 'pearl' polymerization, of different monomers, which affect the appearance and purity of the final polymer. A pearl polymer prepared from a monomer which is a solvent for the polymer consists of uniform spheres, clear and with a bright appearance. Some monomers, however, do not dissolve their polymers and give polymer granules which are opaque and with rough surfaces. If there is insufficient or inefficient agitation of the suspending agent there may be a formation of a large agglomeration of the polymerizing particles. The mass may be so large that great difficulty is encountered in cleaning the equipment.

After the solid particles have been formed they may even then adhere to form aggregates like a bunch of grapes which can enclose some of the suspending agent and water. This may occur owing to the presence of small amounts of impurities. This can sometimes be avoided by adding a very small percentage of a surface active agent, or an inhibitor. There may also be some lack of uniformity if the polymerization vessel is not properly pressure tight, or if the polymerizing mass, operating at atmospheric pressure, starts to boil because of insufficient cooling.

262. Cellulose acetate recording tape is used in increasing quantities both for the recording of vision and sound. The process consists in depositing a thin layer of brown iron oxide on to a film of cellulose acetate, about 1.4 mils. thick. The iron oxide is very susceptible to magnetization when passed over a highly magnetic field.

A tape recording machine may be considered as a device for converting sound waves into magnetic impulses which are then picked up by the tape as it passes a magnetizing head. When the magnetized tape is afterwards run across another head which is sensitive to magnetic impulses, reproduction of the original sound occurs. The cellulose acetate film merely serves as a carrier for the iron oxide.

In the television industry cellulose acetate photographic film is used for recording shows and the latest development is to use a television camera and magnetic tape to record both sound and vision. A big advantage is, that the recording can be played back immediately to see if a retake is necessary. Cellulose acetate film is used to a large extent for advertising and the film, about 2.5 mils. thick, is laminated to paper and heat embossed with grooves containing the recorded message.

(More questions next week)

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MEN and MATTERS

A Review of People and Events

by George A. Greenwood

ALTHOUGH there is no more direct and positive news than what was printed last week about the recent seizure of certain British and Dutch rubber estates in North Sumatra, and the following visit of Mr Robert Saner, the British *Charge d'Affaires* in Djakarta to the Indonesian Prime Minister, feeling is not as comfortable as our Foreign Office representative there thinks it could be.

The directors of the five companies involved, Namu Unggas, Kuala Tiga, Serapuh, Bangkahan, and Sungeu Pendjara, are concerned to get the position clarified as between the statement by the local authority in North Sumatra and the Government. This is because although Dr Djuanda gave Mr Saner the impression that the first announcement did not represent the policy of the Government, the head of the Agrarian Affairs Inspection Service has reiterated that the takeover of the first two named followed the reception at his office of instructions from the Central Government. And the disturbing thing is, so my friends in London say, that in spite of what the Prime Minister is declared to have told Mr Saner, there has still not been any official statement in Djakarta contradicting the original announcement. Directors of the British companies are not at all impressed by the explanation by the Minister of Agriculture, Dr Sadjarwo, that the steps concerning Namu Unggas and Kuala Tiga have been taken because the leases of the estate have expired, and that the Government is now finding out whether applications for extensions have been submitted or not.

The sting was in the tail when he said that if the leases were not extended, the concessions would automatically become State property, and it is assumed in the City that this will apply as a matter of principal to all the other companies involved, with no positive assurances yet as to what compensation may be provided. This uncertainty all through provides an unhappy state of affairs, especially for those undertakings which have big long-term replanting in hand.

In Memoriam

The passing last weekend of Sir George Beharrell at the advanced age of 85, will seem to many of us as the end of an era in the contemporary history of the rubber industry. Unlike some of his colleagues, he had not started in it as a youth, and climbed up from the first rung of the ladder to the top, because he was already a figure of importance and significance in the world of transport and military service when in 1922, he joined the Dunlop Company to become, so long ago as 1923, its joint managing director. But he did already know something about the rubber industry, and it was a great tribute to him that only three years later, he became president of the India Rubber Manufacturers' Association.

Sir George's progressive career in the later years requires no eulogy from anybody, for the facts speak for themselves — his chairmanship of Dunlop, his appointment to the unique office of president, and his election to so many important offices within the rubber industry.

A Personal Note

For my own part, I am concerned with two or three personal recollections. We were born within ten miles of one another, in the West Riding—he a good many years indeed before me, but our families knew each other. More than 20 years ago, I had the occasion to seek from him, professionally, an interview, and wrote to say so. The reply, a little brief, was that he was very much occupied, but if I would say what I wanted, he would answer my questions by letter. And that was that.

But not all. A few weeks later I had an invitation to go and see him in St. James's, when he was almost avuncular in his kindness. So he remained. Sir George was very much the product of his age and generation. I recall that when Lady Beharrell and he were celebrating their diamond wedding anniversary last year, a mutual friend said he was the sort of man who did not really grow old. I think that that is a nice epitaph.

180 Degrees Under?

Mr H. J. Hornsby, commercial manager of the International Synthetic Rubber Co. Ltd., Hythe, Southampton, left London Airport recently for Sydney, Australia, for a four weeks' study of the synthetic rubber markets in Australasia.

During his tour Mr Hornsby, together with the company's agent, L. J. Herman and Co. Pty. Ltd. of Melbourne, will, I understand, visit tyre manufacturers and industrial companies to discuss the many new applications of synthetic rubber in industrial production.

On the return journey to England he will call on agents in New Zealand and India.

A Chemicals Leader

There is another death to record this week, and, oddly enough, it is concerned also with the West Riding of Yorkshire, but in a different industry. Mr Augustus James Marks, of Fixby, Huddersfield, who passed away in a London hospital last week at a comparatively early age, was a director of A. H. Marks, of the Wyke Chemical Works, near Bradford, a firm which for a long time has been well known in the chemical and plastics industry. Although Mr Marks himself lived at Fixby, near Huddersfield, he remained not only closely concerned with the business, but also with the public life of Wyke and district, especially the Parish Church, to which his father gave its peal of bells 30 years ago in memory of his wife. Mr Augustus Marks leaves a widow and two young sons.

I have some further information about Dr Luigi Emanueli, vice-president of Pirelli S.p.A., and a director of Pirelli-General Cable Works Ltd., who death we briefly mentioned last week. Dr Emanueli,

who had many friends in this country, was born in 1883 and joined the Pirelli group of companies there in 1907. With it he spent the remaining 52 years of his life.

Both in Italy and elsewhere he was pre-eminent for his work in the field of electro-technical application, and it won him recognition from many of the highest scientific bodies. At Milan last year he was made an honorary member of the American Institute of Electrical Engineers, its highest distinction, and earlier this month (February), it was announced that the Council of the Institute of Electrical Engineers were going to give him the Faraday Award. What a tragedy that Dr Emanueli did not live to receive it!

Enterprise Pays Off

It is not my normal function to deal with the plain facts of company reports and progress, but the case of Plastics Engineers Ltd., of the Treforest Trading Estate, near Pontypridd, in South Wales, is a slightly different cup of tea. This now considerable enterprise, which records a sharp rise in trading profit and a trebling of dividends, is one of those which has helped the South Wales industrial area to recover themselves during and after the grievous slump in the coal and shipping trade, and which has almost its counterpart in Aberdare Cables, Sir George Usher's enterprise, to which I have more than once referred.

Preliminary figures of Plastics Engineers show a trading profit for 1958 of £34,310, which is more than 3½ times that of 1957. It is reached after some important deductions such as £15,172 for depreciation and £5,742 costs of special tools not recoverable from customers. The dividend is raised from 5 to 15%, and Mr G. T. Cantlay, the chairman, says rightly that these figures indicate a continuance of the improving trend of trade throughout 1958 as well as an encouraging trend which is projecting itself into the current year.

A Change Over

It is announced this week that Mr John B. Young, technical manager of the Rubber and Plastics Division of Reed Brothers Ltd. since 1954, is to become the new chief engineer of the Cannon Rubber Manufacturing Co. Ltd. of Tottenham.

Mr Young, who is still in his thirties, is a Londoner, brought up at Wembley, and was educated at Haberdashers' Aske's School at Hampstead and afterwards at various technical institutions and colleges ultimately becoming an A.M.I.Mech.E. Subsequently he held various posts including one with George Cohen Sons and Co. Ltd. at Wood Lane; and then with K and L at Letchworth; with Robert Court (Reading) and Robert Legge in North London; the Peabody Commercial Company in Victoria before going to Reed Brothers, where he has been for the past four years. Mr Young, who is married and has two young daughters, lives at East Sheen.

Plastics Statistics

According to the official Trade and Navigation Accounts for January, exports of plastics manufactured goods from the UK during the month totalled 11,617 tons, compared with 10,083 tons in the corresponding month of 1958. Exports during January were valued at £2,980,484 (£2,777,311). Sweden took 1,007 tons worth £262,849; Australia, 919 tons, £374,210; and the Netherlands, 652 tons, £162,556. Imports of plastics materials during the period amounted to 3,685 tons, compared with 3,490 tons in 1958. The values were £1,320,073 and £1,449,247, respectively.

Exports of plastics manufactured goods in January, with values, were as follow:

	Tons	£
Acrylic sheet, rod, tube, film, foil and profile shapes in primary form ..	597	365,586
Aminoplastics—		
Solid and liquid resins, including solutions ..	1,095	124,274
Moulding and extrusion compounds	444	82,437
Cellulose plastics—		
Moulding and extrusion compounds ..	284	84,361
Sheet, rod, tube, film (excluding regenerated cellulose), foil and profile shapes in primary form ..	127	83,634
Phenolics and cresylics—		
Solid and liquid resins (straight and modified) ..	760	114,774
Other	476	150,433
Polystyrene	913	204,531
Polythene sheet, rod, tube, film, foil and profile shapes in primary form ..	77	33,938
Polyvinyl chloride—		
Polymers and copolymers ..	623	99,300
Moulding and extrusion compounds ..	830	190,552
Sheet	557	252,863
Other	36	10,963
All other	3,899	1,094,805
Waste and scrap ..	896	88,033
Total ..	11,617	2,980,484

Imports of plastics materials during January amounted to 3,685 and were valued at £1,320,073. Details are as follow:

	Tons	£
Alkyd solid and liquid resins, solutions, emulsions and dispersions	147	28,736
Cellulose plastics—		
Photographic (including cinematograph) film base (except acetate butyrate) ..	79	97,604
All other	161	148,700
Polyvinyl chloride—		
Polymers and copolymers ..	628	97,981
All other	447	164,577
All other	2,220	782,475
Total ..	3,685	1,320,073

US NEW RUBBER CONSUMPTION

Consumption of new rubber in the United States during January was at a record high of 140,000 tons. This was up sharply from the depressed level a year ago of some 115,000 tons and compares with 132,840 tons in December 1958.

With rubber consumption reportedly continuing at a high rate in February too, experts in the US industry are increasing their estimates of total new rubber consumption for all of 1959. Some private guesses now put 1959 demand at around 1,550,000 tons. That would be a gain of more than 14% over the 1,357,000 tons consumed in 1958. The peak was 1,529,699 tons in 1955, the year of the auto boom.

Of this year's anticipated rubber consumption 1,000,000 tons or so will be the man-made variety, according to industry sources. This would put synthetic consumption at a new high exceeding the 1957 peak of 926,000 tons and far surpassing the 873,000 of 1958. The ratio of synthetic to natural rubber usage is expected to rise to around 65%, a new peacetime high. That would be a trifle above the previous peacetime high ratio last year of 64 3/10%. It would compare with a 51½% ratio as recently as five years ago.

Polycarbonates

VARIETY OF PROPERTIES

POLYCARBONATES of high molecular weight can be produced from 4,4' dihydroxy-diphenylalkanes. These materials are manufactured by Farbenfabriken Bayer, under the trade name 'Makrolon.' The makers claim that 'Makrolon' combines a variety of valuable properties, including: Good impact strength at temperatures up to 135°C. (275°F.) and below −100°C. (−148°F.); good electrical properties; low water absorption, approx. 0.3—0.4%; good weather resistance; and good transparency.

'Makrolon' is chiefly intended for injection moulding and extrusion, but it can also be formed by any of the other conventional methods. Moulded 'Makrolon' parts are tasteless, odourless, withstand sterilization, are non-toxic, resistant to perspiration and not stained by dyes. They possess good resistance to water, acids, brine, fats and oils, as well as petroleum hydrocarbons.

This material is supplied as cylindrical pellets and is available in transparent and opaque shades. 'Makrolon' S is designed for injection moulding and another grade 'Makrolon' E, which has a higher melt viscosity than the S grade, is more suitable for extrusion.

Mechanical Properties		
Specific gravity, g/cc	DIN 53479	1.20
Flexural strength, kg/sq cm	54452	1,100-1,200
Impact strength, kg cm/sq cm	53453	100% not broken
Impact strength (notched), kg cm/sq cm	53453	15-25
Compressive strength, kg/sq cm	53454	790-840
10 sec		900-1,050
60 sec		870-1,000
Tensile strength, kg/sq cm	53455	620-670

'Makrolon,' it is claimed, possesses not only very good mechanical properties at 100m temperatures, but combines these with exceptional thermal properties. In addition to the very high heat resistance already mentioned it also possesses exceptional impact strength at low temperatures, even at the temperature of liquid air (−190°C. = −374°F.) its elasticity is still so high that it does not break with the brittleness of glass. It is hoped that 'Makrolon' will open up new potentialities in engineering and make it possible to solve many problems for which previously no suitable plastic materials were available.

Due to its transparency, 'Makrolon' is suitable for lighting fixtures and all other applications where a temperature and impact resistant transparent material is required. It has a refractive index of 1.587 (which is very high for plastics) and a mould shrinkage of 0.7—0.8%. Its water vapour permeability is 2.6 x 10^{-3} g. x cm.$^{-1}$ h.$^{-1}$ Torr^{-1} at room temperature. This property is to a great extent a function of film thickness. The following table lists some data on gas permeability:

Hydrogen:	1.35×10^{-9} g cm^{-1}h^{-1}Torr^{-1}	
Carbon dioxide:	0.75×10^{-9}	"
Oxygen:	0.18×10^{-9}	"
Nitrogen:	0.01×10^{-9}	"
Air:	0.04×10^{-9}	"

'Makrolon' is distributed in England by R. H. Cole and Co. Ltd., 2 Caxton Street, Westminster, London, S.W.1.

Electrical Properties

Test	*Unit*	*Specification*	*Specimen*	*Makrolon*
Dielectric strength	Kv/mm	DIN 53481	Foil of 0.05 mm thickness	>100
Volume resistivity	Ohm cm	DIN 53482	Round disc 80 mm diam., 2 mm thickness	
Dry				4×10^{15}
After 4 days at 80% relative humidity				9×10^{14}
Surface resistivity	Ohm	DIN 53482	Round disc 80 mm diam., 2 mm thickness	
Dry				8×10^{12}
After 4 hours' water immersion				6×10^{12}
Permittivity (SIC)	—	DIN 53483	Round disc 80 mm diam., 2 mm thickness	
100 c/sec				~3.0
1 mc/sec				~3.0
Power factor (tan σ) 50 c/sec	—	DIN 53483	Round disc 80 mm diam., 2 mm thickness	5×10^{-4}

CEYLON RUBBER PURCHASES

The Ceylon Government has suspended its purchases of rubber in the open market for shipment to the Chinese People's Republic. According to trade circles in Colombo, this will mean freeing the trade temporarily from its obligation to reserve part of its stocks for China. The Ceylon Government has already completed its commitments for 1958 under the Ceylon/China rubber-for-rice barter deal, and quantities and prices for the current year are still subject to negotiation between the governments of the two countries. A Chinese trade team is expected in the capital shortly to negotiate commitments for the current year. Ceylon supplied 34,000 tons of rubber to China under her contract for 1958.

Mr J. L. Burdon, Mr D. A. Cross and Mr F. G. Stapley have been appointed to the board of the Karak Rubber Company. They succeed Mr O. J. Roy, Mr A. E. Cheshire and Mr R. G. Clayton, who have retired as directors. Mr C. R. Curtis has been appointed secretary following the retirement of George Williamson and Co. It was announced on February 9 that the Contanglo Banking and Trading Co.'s offer for the shares of Karak had become unconditional.

British Plastics Federation

SILVER JUBILEE BALL

THE annual dinner and dance of the British Plastics Federation became on February 20, in celebration of the 25th anniversary year of the Federation, the Silver Jubilee Ball. Some 930 members and their guests gathered at Grosvenor House, London, to shatter all previous records.

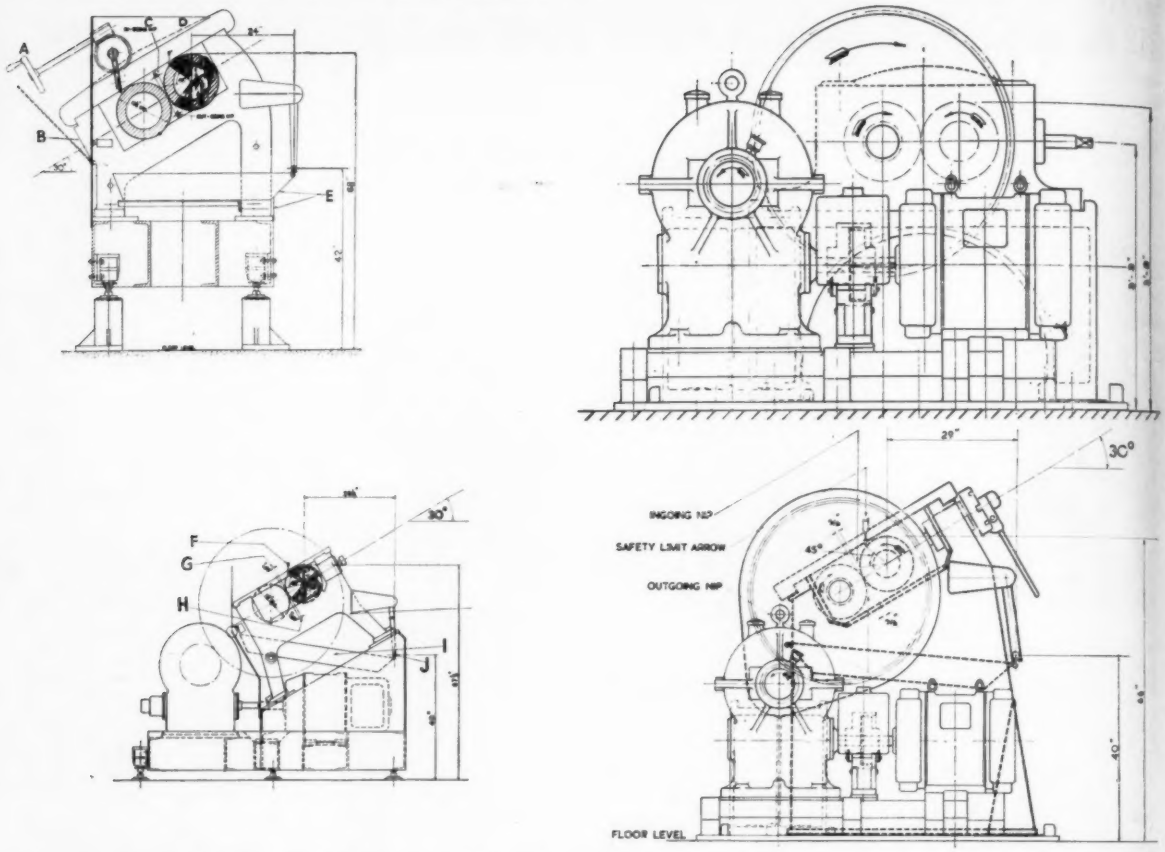
Members and guests were received by Mr N. B. Punfield, chairman of the Federation, and Mrs. Punfield and by Mr H. V. Potter, president of the Federation, and Mrs Potter. Showings of the film of last year's Torquay conference went on throughout the evening and proved as popular as the very entertaining cabaret. Dancing to the music of Arthur Salisbury and his orchestra went on well beyond the scheduled time for carriages, but even so, general comment was that the evening had proved far too short—evidence enough that the organizers had once again achieved a very real success. Altogether a memorable occasion.

Fred May's impressions of some of those present at the ball are on the facing page.

At the British Plastics Federation Silver Jubilee Ball — — with Fred May

SMALL MILL SAFETY

Continued from page 312



Conversion of 30 in. x 12in. x 11¾ in. mill to Ross-Warne principle without disturbing existing foundation or mill bedplate by the substitution of a 'Monoblock' mill frame. Fig. 11, *above left*, Ross-Warne Mill No. 1. A—Handwheel adjustment mounted on R.H. frame looking from this side of the mill. B—Inspection door with normally 'made' limit switch attached. Opening door breaks motor control circuit. C—Ten SWG guarding at side. D—Safety limit arrow. E—Ten SWG tray and skirt guards. Fig. 12, *below left*, 24in. x 12in. x 12in. Ross-Warne Mill No. 2, F—Safety limit arrow. G—In-going nip. H—Out-going nip. I—Ten SWG tray. J—Sensitive safety bar. Fig. 13, *above right*. 30 in. x 12 in. x 12 in. mill at present installed. Fig. 14, *below right*. Monoblock conversion of mill shown in Fig. 13 without disturbing foundation motor or gearbox

(some 4ft./6ft. deep) which are resisted by the steel bedplate.

3. The floor does not have to be level as the mountings are individually adjustable — sloping floors are often laid to facilitate drainage.
4. There is no interruption of production whilst a large foundation is excavated and poured in an existing factory. Moreover the level floor can be used for storage space until the mill is delivered.
5. The mill is erected and tested at the machinery manufacturers works and delivered fully assembled so that no time is lost on site erection and testing in the customers' premises.
6. The complete machine can be re-sited to suit changes in production requirements and layouts at a fraction of the cost of the foundation for a conventional concrete mounted mill and with no loss of accuracy and minimum loss of time as the mill is not dismantled.

Monoblock Conversions

The idea of fabricating both side frames of a mill in one piece so that the action of machining the slide and thrust faces automatically aligns the rear roll bearings for all time which has been successfully introduced by the writer over the past two years provides a simple and inexpensive method of converting small horizontal two roll machines into Ross-Warne mills. Fig. 13 illustrates the end elevation of a 30in. x 12in. x 12in. horizontal mill installed at Wm. Warne and Co. at the moment, and Fig. 14 shows the proposed modification of the machine to a Ross-Warne mill without disturbing in any way the drive motor, gearbox, bedplates or foundation.

The all steel Monoblock frame is designed to bolt down to the existing mill bedplate bolts and merely accepts the existing mill rolls complete with bearings and gears. The bull wheel is raised relative to its previous position; the front roll is higher and the tray is inclined towards the operator. It is confidently expected that the conversion can be made during a weekend without interfering with normal production.

It should be noted however that the drive shaft of this mill is unusually high in relation to the rear roll but if this is not the case it will be necessary to replace the bull wheel and pinion with new gears meshing at a greater centre distance in order to avoid disturbing the foundations.

Application to Larger Mills

The all steel Monoblock frame conversion of mills of 16in. dia. and greater to the Ross-Warne Principle provides a simple and inexpensive method of raising the level of the front roll of existing machines without disturbing the existing foundation and with the minimum interruption of production. In some cases it may be necessary to fit new bull wheels and pinions as indicated above but the method is far cheaper

Continued on page 331

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Plantation Commentary

by our Malayan Correspondent

THERE is no easy way for natural rubber to meet the varied challenge of synthetic. Industry leaders have pointed out for many years that the solution is the application of fairly well-known principles, such as replanting, if natural rubber is to be made attractive.

This has never been better borne out than in a report published in *Planters Bulletin*, a publication of the Rubber Research Institute on technically classified rubber. There were hopes at one time that this would be a very potent answer to synthetic by giving the manufacturer a much better indication of the composition of the rubber he was purchasing. Unfortunately this is not the case and the conclusion reached by the publication, on the basis of a fresh survey carried out in the US, is that there is unlikely to be an increase in the demand for this special rubber unless more of it is made available, especially in the lower grades, without premium.

Only One in Six

The report for the *Bulletin* was made by the Natural Rubber Bureau in Washington. Of the six manufacturing firms interviewed in the US only one stated that they found no advantage in TC rubber but none would give the material unqualified support. Three firms said that they did not specify TC rubber when ordering.

'The opinion confirms the conclusions from a previous, more comprehensive survey in 1956,' says the publication, 'that manufacturers are reluctant to pay a premium for TC rubber and that the potential demand in the United States is for the lower grades.'

The statements of seven New York rubber importers showed that most of them had regular customers of long standing for the rubber. Two, however, said that they had had no new buyer for several months. Three shippers' agents said that they handled a 'fairish volume' but another said there was very little interest.

'It would appear therefore,' says the *Bulletin*,' 'that the position has remained unchanged over the past two years, the big manufacturers evincing little interest while some of the smaller firms regularly buy a portion of their No. 1 RSS as technically classified.

'We conclude that no great increase in demand should be anticipated unless more TC rubber, particularly in the lower grades, is made available without premium to the manufacturers. The present small but steady consumption may be expected to continue.'

There are, of course, financial objections to selling TC rubber without a premium while increasing the amount available in the lower grades would not be too easy.

Meanwhile, the Minister of Commerce and Industry, Mr Tan Siew Sin, in the replanting sphere, is still chasing his reluctant smallholders who are nevertheless beginning to respond to the campaign to put the importance of replanting before them.

In a message printed in the first edition of a new publication, *Towards Prosperity*, of the Rubber Industry (Replanting) Board, Mr Tan has pointed out that there is nothing more advantageous to the two million people in the rural areas who directly or indirectly depend on rubber than to replant. They can, he has told them, raise their own living standards by as much as 400%.

Mr Tan in the message bluntly tells the smallholders that he is not happy with the way they are responding to the Government offer of help with replanting as although the smallholders own 43% of the rubber planted in the Federation only one-fifth of the smallholders have replanted.

The Minister before taking his present post administered the large rubber holdings held by the Tan family and he has again hit out at the ill-informed critics who contend that the emphasis on rubber replanting and Mr Tan's own desire to have more rubber planted in Malaya may result in more rubber being produced than the world market can absorb.

In his message to the smallholders he says: 'Even if all the output of the replanting and new planting were put together the need for natural rubber in the world market would not be met. Since the last war the world's rubber consumption has increased by 100,000 tons a year. The danger now is that if we do not produce more natural rubber synthetic rubber will outdo us.'

The print order for the first issue of the magazine was 100,000 and it is expected to increase to 150,000 eventually.

Figures are now coming in of the success of the Replanting Board's scheme in sending mobile teams to visit rural areas to persuade the smallholders. There is now no danger that the board will continue to be embarrassed by a fund of nearly £20 millions for smallholder replanting which was continually being added to through the special cess on exports but was not being paid out to smallholders quickly enough because of tardy replanting applications.

Smallholders are now thought to be fully aware of what can be done for them and applications because of the campaign totalled 25,000 at the end of the year. In all the publicity units visited 437 centres and the exhibitions were seen by about 600,000 people.

The figures for the 1958 exports of rubber from Malaya show some significant changes in the buying habits of Malaya's customers and in the customers themselves. Exports were exceptionally high. At 1,080,656 tons (a preliminary figure) they were the highest in seven years and the third highest post-war. More latex was purchased than ever before and both Russia and Communist China were very much heavier buyers than before.

The largest amount of rubber ever exported from Malaya was in 1951 during the Korean War boom when exports rose to 1,155,267 tons but last year, by no means a good year for business or the price, came very close to this record which may be broken this year. Average monthly exports last year were 90,054 tons but December exports at 100,421 tons were exceptionally high and were something of a surprise to the market.

Latex's share of rubber exports last year was 115,433 tons, or just over 10% of the total of rubber exported. This compares with the 5% share that latex had of the rubber exported in 1951.

Most of the increased use of latex has come obviously from new uses found for the product, but the two big consumers of Malayan latex, Britain and the US, in fact took slightly less than the year before. It was the smaller countries that used more notably the Netherlands (4,448 tons), New Zealand (1,110 tons), Italy (6,594 tons), West Germany (11,076 tons), France (5,786 tons), Australia (4,575 tons) and Japan (9,930 tons).

Russia and China

Undoubtedly much of the record export came from the heavy purchases by Russia and China, with China virtually doubling her purchases and Russia increasing her purchases by nearly 80%. In the event Russia and China during the year became Malaya's fifth and sixth best customers respectively with purchases of 68,436 tons and 64,036 tons. Another country which has had an effect on the market is Poland who last year increased her purchases by 80%. Both Britain and the US took slightly less last year but Japan, Malaya's third best customer with purchases totalling 110,738 tons, increased her imports of Malayan rubber by 2%.

Although the presence of China in the market this year is still a little doubtful, in view of the ban placed by Malaya on certain Chinese commodities, Russia is certainly likely to remain a heavy customer.

The fact has been emphasized by the arrival of the first of four Russian ships which will lift between them 18,000 tons, the purchase of which brought about a slight fluctuation in the market. Market sources here ex-

pect Russia to continue to be a heavy buyer for several more months.

Common Market Effect

Neither rubber nor tin exports from Malaya is likely to be affected by the arrival of the European Common Market according to Government experts here.

An official spokesman said, 'We are not worried about the Common Market but we recognize the benefit that an economically strong Europe will bring. If they are prosperous then we will be able to sell more.' Rubber is expected to come under the clause covering raw material imports and limits the duty that may be imposed to 3%. But in fact the common tariff, which will be arrived at by averaging the tariffs at present in existence, will not work out at more than 10%.

Informal discussions point to the fact that the Six may not bother to impose this tariff. However, the Malayan Government plans to keep a close watch on the position of the associated territories of the Common Market whose special position is worrying other countries which rely heavily on exporting agricultural raw materials, such as cocoa, bananas, tea and tobacco.

Protection Requested

The Malayan Rubber Goods Manufacturers Association, which in the past has been critical of the actions of the Ministry of Commerce and Industry, has warned that if the Government does not give the bicycle tyre and tube industry protection it may have to cease production. The association said that it had repeatedly asked the Government over the last 10 years for protection against 'foreign dumping' and pointed out that if it had to stop production the present workers will be retrenched.

In a letter to the Ministry the association alleged that nothing had been done to help it although it was capable of supplying the entire local market with tyres and tubes and having a surplus for export. The association claimed that the Malayan product was comparable in quality and price with the imported product and additionally claimed that more than 2,500,000 bicycle tyres and 4,000,000 bicycle tubes were manufactured every year. This is considerably more than the estimated Malayan consumption.

Wage Dispute

The Ministry of Labour has once again intervened in the wage dispute between the rubber workers and the Malayan Planting Industries Employers Association, a dispute that has dragged on through a complicated series of negotiations which began with the submission by the National Union of Plantation Workers of a wage claim on January 31 1958.

The negotiations are producing something of a record in Malayan industrial disputes for being the most long drawn-out and possibly the most long-winded ever held. There is a chance that the dispute may now have to go to arbitration for the two sides seem to have exhausted all possibility of compromise. One reason given for the breakdown is the length of the agreement, whether it should last for 18 months as the employers want or 12 months as the union suggests. The difference seems so minor that there must be better reasons than this.

However, it had already been announced that a substantial measure of agreement had been reached, before the new breakdown, on a new wage structure which begins with a guaranteed floor wage and then adds to it. This is different from the present wage basis which is linked very largely to the rubber price. In general the Malayan public has lost interest in this talking marathon and it is becoming increasingly difficult to see what is preventing the two sides settling down and disposing of all their difficulties.

The negotiations, however, have not taken up all the union's time. In its magazine it has praised the Malayan Trades Union Congress for its decision not to allow unions to take part in politics, either by officially backing parties or by collecting a political levy.

The union declared, 'Trade union participation in politics and contributions to political funds at present are bland invitations to self-seeking, scheming politicians to tinker with unions to suit their political ends, especially in a country where the unions have not consolidated.'

As the union is the largest in Malaya it is strong support for the congress on an issue which has aroused a great deal of discussion in union circles.

The union's magazine has also criticized the Minister for Natural Resources for allowing European estates to be fragmented (a process by which they are bought at a good price and then broken up into small lots and sold to smallholders).

The union said that the Minister's efforts in dealing with the position had been half-hearted and he had not made any helpful suggestions. It pointed out that early last year the Minister had stated that he did not think the extent of fragmentation warranted any special measures. Since then, said the union, unemployment among rubber estate workers had steadily increased as a result of 'indiscriminate fragmentation until it has reached such proportions that the Government has had to charter a ship to repatriate most of the workers who had nowhere to go.'

The union's own suggestions for dealing with fragmentation are the payment of some form of compensation or severance pay when an estate is fragmented and the creation of small settlements on the fringes of estates so that the unemployed workers can be settled there.

British Plastics Federation

EXHIBITS AT DUSSELDORF

THE British Plastics Federation, in collaboration with the British Board of Trade, is to have a joint stand at the International Plastics Fair, Dusseldorf (Kunststoffmesse 1959), October 17 to 25 1959.

The following companies will exhibit: Bakelite Ltd., Brainos and Company, Bristol Aircraft Ltd., British Geon Ltd., British Resin Products Ltd., Durapipe and Fittings Ltd., Ekco Plastics Ltd., Novadel Ltd., Portland Plastics Ltd., Bernard Wardle (Everflex) Ltd. RUBBER JOURNAL AND INTERNATIONAL PLASTICS is among the journals also exhibiting.

Mr F. G. Popham has been promoted to district manager at the new Firestone district office in Lincoln. Joining Firestone in 1946, Mr Popham has operated as Firestone sales representative in Lincolnshire and is well known to the industry in the East Midlands.

SMALL MILL SAFETY

Continued from page 328

than raising the mills either on concrete foundations or by mounting them on anti-vibration bedplates and causes considerably less interruption of production.

Acknowledgement

The writer wishes to thank Wm. Warne (Holdings) Ltd. and Reed Brothers (Engineering) Ltd. for permitting the publication of work carried out on their behalf and trusts that the Rubber and Plastics Industry will appreciate the Ross-Warne mill which is acclaimed by all who have practical experience of its use.

In his opinion, Mr G. A. O. Ross' idea for the smaller (and more dangerous) mills less than 16in. dia. is an advance as great as the Lunn Principle sensitive safety bar was for horizontal mills of 16in. dia. and greater. Now the idea has been shown to be practicable it is hoped that the Industry will accept the change quickly in the interest of operators' safety and general convenience of the operator and management.

Rubber Statistics

FRANCE — JAPAN — GERMANY

ACCORDING to the latest information supplied by the Secretariat of the International Rubber Study Group, France imported 98,252 tons of crude rubber and 9,897 tons of latex during the first three-quarters of 1958. During the first three-quarters of the preceding year, imports of natural rubber were about 1,500 tons higher, and included 101,985 tons of crude rubber and 7,607 tons of latex, imports of the latter having thus increased by about 30% in 1958.

The 1958 imports have mainly been taken from Vietnam (48,563 tons) and Malaya (45,242 tons), with comparatively small quantities from Cambodia (3,920 tons), Belgian Congo (4,888 tons), Indonesia (2,063 tons), Ceylon (1,249 tons) and French Africa (1,047 tons). Imports from Cambodia have increased by nearly 50%, compared with the 1957 figure of 31,145 tons for the same period, whereas imports from Malaya have fallen by some 25% from the 1957 figure of 58,135 tons. Exports during these months amounted to 491 tons, leaving 107,658 tons available for consumption compared with 106,134 tons of net imports in the earlier period.

The consumption totals for this period were 93,782 tons of crude and 8,968 tons of latex, compared with the 1957 figure of 90,443 tons of crude and 7,430 tons of latex. Stocks of natural rubber on hand at September 30 included 21,539 tons of crude and 2,107 tons of latex, compared with stocks on hand at the beginning of the year of 17,560 tons of crude and 1,178 tons of latex.

Imports of synthetic rubber during these nine months totalled 44,583 tons, of which 28,053 tons came from the United States and 13,900 tons from Canada. During the first nine months of 1957, 39,741 tons of synthetic were imported, 22,391 tons coming from the United States and 15,903 tons from Canada. The 1958 total included 28,984 tons of S-type synthetic, 5,149 tons of neoprene, 8,054 tons of butyl, 1,555 tons of N-type and 841 tons of synthetic latex.

Consumption of synthetic rubber during this period amounted to 40,192 tons, an increase of about 10% compared with the 1957 figure of 36,816 tons. Stocks on hand at September 30 totalled 9,842 tons, almost double the amount on hand at the beginning of the year, which was 5,451 tons.

Japan

The Study Group has also published details of the Japanese rubber position up to the end of September. Imports of natural rubber during this period included 84,129 tons of crude and 7,368 tons of latex, representing a decline of over 12,000 tons compared with the figures for the previous year, when imports of crude amounted to 97,414 tons and those of latex to 6,246 tons. The 1958 imports were mainly received from Malaya (79,798 tons), and in addition smaller quantities were received from Indonesia (3,730 tons), Ceylon (3,742 tons) and British Borneo (3,930 tons). The imports from Indonesia represented a considerable decline compared with the previous year, when imports had totalled 21,308 tons; imports from Malaya were almost unchanged compared with the earlier figure of 80,469 tons.

Consumption of natural rubber during these months totalled 84,730 tons of crude and 7,070 tons of latex, a decline of about 10% compared with the 1957 totals of 94,360 tons of crude and 5,980 tons of latex. Stocks of natural rubber on hand at September 30 totalled 11,819 tons of crude and 1,706 tons of latex, the January 1 stocks having stood at 12,420 tons of crude and 1,410 tons of latex.

Imports of synthetic rubber during this period totalled 11,791 tons, of which 9,086 tons came from the United States and 2,152 tons from Canada; imports in 1957 during the same period had totalled 10,852 tons. Consumption of synthetic rubber during this period amounted to 11,850 tons as against 9,720 tons in the previous year, and stocks of synthetic rubber, which had stood at 2,870 tons at the beginning of the year, had fallen slightly to 2,811 tons by the end of the period.

Germany

The West German rubber information contained in the latest figures issued by the Study Group brings the position up to the end of October. Imports of natural rubber during the first 10 months of 1958 totalled 107,835 tons, including 97,371 tons of crude and 10,464 tons of latex compared with comparable imports for the preceding year of 114,411 tons. Malaya supplied 53,276 tons of the 1958 imports, Indonesia 26,552 tons, Ceylon 9,881 tons, Thailand 6,191 tons, Nigeria 4,602 tons and the Belgian Congo 1,874 tons, while smaller quantities were supplied by British Borneo, Vietnam and Cambodia.

Consumption of natural rubber during these months totalled 102,840 tons of crude and 10,039 tons of latex, or 112,879 tons in all, compared with the previous year's consumption total of 116,075 tons. Stocks on hand at the end of October totalled 11,979 tons of crude and 506 tons of latex, stocks at the beginning of the year having stood at 15,154 tons of crude and 657 tons of latex.

Production of synthetic rubber in Western Germany amounted to 16,854 tons during these months, representing an increase of some 70% over the 1957 figure of 9,920 tons. Imports during the period, which totalled 32,857 tons, included imports from the United States of 27,346 tons and from Canada of 4,923 tons. Re-exports amounted to 3,799 tons, leaving 45,912 tons available for consumption, compared with an actual consumption total of 42,655 tons. The consumption total for the same months of 1957 was 39,536 tons. Stocks of synthetic on hand at the end of October had fallen from the January 1 total of 6,864 tons to 4,882 tons.

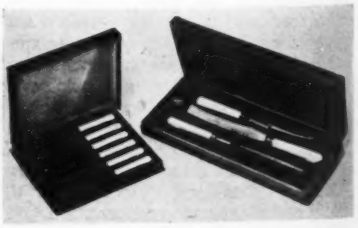
Reclaim rubber production amounted to 31,932 tons and, after allowing for exports, 30,254 tons were available for consumption. The consumption total amounted to 29,860 tons, and stocks, which at January 1 had stood at 4,182 tons, had risen to 4,576 tons by the end of the period.

Midland Silicones

Midland Silicones Ltd. have announced a reduction of almost 20% in the price of Silastic LS-53 fluorinated silicone rubber. This is in addition to the 10% reduction in the price of this rubber which the company announced in October of last year. Prices for Silastic LS-53 effective from February 4, have been reduced to: 1, 9 lots, 205s. per lb.; and 10, 99 lots, 200s. per lb.

Plastics Industry Education Fund

Mr E. K. Cole, chairman of E. K. Cole Ltd., has been appointed a Trustee of the Fund in place of Mr J. L. Daniels, who died last year.



Contoured flock-sprayed polystyrene liners are now being manufactured by Boxmakers Ltd., Ordsall Lane, Manchester, 5, for the interiors of cutlery presentation boxes. The liners or platforms are vacuum-formed on a Hydro-chemie machine which provides a continuous output of the intricately contoured mouldings. The platforms have been carefully designed so as to display the cutlery to its best advantage and individual contours are so shaped that each piece fits snugly into its groove. The flock is durable and attractive and is similar to velour in touch and appearance

PATENT SPECIFICATIONS

The following information is prepared from published Patent Specifications. The full Specifications can be obtained from the Patent Office, 25 Southampton Buildings, London, W.C.2, at 3s. 6d. per copy (including postage).

Adhesives

No. 805,376. Tivoli-Werke AG. Application and Filed, May 22 1956. Application in Germany, May 23 1955. Published, December 3 1958.

An adhesive is made by dissolving natural rubber in a strong solvent for rubber and then adding SBR dissolved in a polymerizable monomer, preferably styrene. The adhesive is especially suitable for sticking footwear soles provided at least one of the surfaces to be stuck consists of vulcanized or unvulcanized natural rubber. When a film of the adhesive is applied to a rubber surface and the solvent for the rubber has evaporated, the styrene initiates a cross - linking action between the rubber surface and the natural rubber, the SBR and the styrene in the adhesive without the use of a polymerization catalyst. Resins, cyclized rubber and/or chlorinated rubber may be incorporated in the adhesive.

Reinforced Polythene Articles

No. 806,344. Imperial Chemical Industries Ltd. Inventors: E. R. S. Jones and W. Reddish. Application, December 2 1955. Filed, November 30 1956. Published, December 23 1958. Addition to No. 766,813.

Reinforced polythene articles are made by coating a metal reinforcement with a thin layer of polythene, oxidizing this layer by baking it at a temperature above its melting point, locating the coated metal reinforcement in a mould by means of pieces of polythene and injecting molten polythene into the mould to surround the reinforcement and to fuse together the coating on the reinforcement and the pieces of polythene. By this process the reinforcement is firmly keyed to the polythene and may be completely embedded in it. The production of a polythene sieve, reinforced with a steel wire gauze, is described in an example.

Elastomers

No. 806,142. International Latex Corporation. Application and Filed, April 6 1955. Application in USA, April 16 1954. Published, December 17 1958.

Elastic films are made from a blend of natural rubber latex and a vinyl copolymeric elastomer containing pendant carboxyl groups, the major portion of the carboxyl groups having been cross-linked with a polyvalent metal cation or an organic polyvalent basic radical. The ratio (dry weight) of the natural rubber to the copolymeric elastomer is in the range of 2.3:1 to 50:1. Films made from such blends have a greater resistance to tearing than films made entirely from natural rubber latex.

Examples of suitable vinyl copolymeric elastomers are copolymers of butadiene and methacrylic or maleic acid and terpolymers of butadiene, acrylonitrile and methacrylic acid. Such terpolymers have the advantage of oil-resistance and blends of natural rubber latex with terpolymers of this kind are used mostly in the examples. Service tests indicate that shaped articles, such as girdles, baby pants and the like, made of films produced according to the invention, have a markedly improved resistance to tearing compared with films containing natural rubber only.

Organosilicon Polymers

No. 806,582. Midland Silicones Ltd. Application and Filed, April 1 1957. Application in USA, July 5 1956. Published, December 31 1958.

Organic-organosilicon graft polymers are made by contacting an organosilicon polymer with a non-silicic olefin in the presence of a free radical generator and a finely divided inert inorganic solid. The organosilicon polymer used is substantially free from silicon-bonded hydrogen atoms and from organic radicals having aliphatic unsaturation. Non-silicic olefins used in the examples include trifluorochloroethylene, styrene, acrylonitrile, vinyl acetate and others. The graft polymers are useful as lubricants, surface active agents, hydraulic fluids, electrical insulation and for other purposes.

Shorter Abstracts

Plastic Compositions. 804,956. Styrene Products Ltd. Filed, March 19 1957.—A plastic composition comprises a blend of (a) nitrile rubber and (b) a terpolymer of styrene, acrylonitrile and a third monomer containing a copolymerizable :C:C: group.

Fire-resistant Fabrics. 805,499. Greengate and Irwell Rubber Co. Ltd. Filed, October 31 1956.—Fabrics are rendered fire-resistant by treatment with a dispersion of PVC, tritolyl phosphate and ammonium phosphate, with or without the addition of antimony oxide.

Mineral Pigments. 805,512. Esso Research and Engineering Co. Filed, November 23 1956.—Hydrated silica, clay, calcium silicate and alumina are treated with cycloalkadiene-substituted halosilanes. The treatment improves the reinforcing properties of the pigments when incorporated in rubber, particularly butyl rubber.

Rubber Crop Returns

RUBBER ESTATE AGENCY LTD.

	January 1959 lb.		Fin. year to date lb.		No. of mths. of fin. year to date
Bandar Sumatra	121,000	(97,000)	659,000	(606,000)	6
Batu Kawan	66,500	(69,000)	320,700	(324,860)	5
Bukit Tupah	113,710	(130,400)	1,577,300	(1,371,540)*	13
Buntar	105,000	(93,500)	704,300	(649,300)	7
Eastern Sumatra	401,000	(400,000)	3,838,500	(3,701,000)	11
Amalgamated Rubber	41,800	(36,300)	41,800	(36,300)	1
Java Rubber Plants.	92,620	(89,100)	92,620	(89,100)	1
Jeram	380,500†	(231,000)	2,404,500	(1,899,100)	10
Kepitigalla	71,500	(77,000)	605,500	(490,500)	10
Kuala Lumpur	515,430	(386,000)	3,150,170	(2,510,340)	7
Langkat Sumatra	90,000	(90,000)	90,000	(90,000)	1
Soember Ajoe	28,160	(30,800)	113,520	(117,700)	4
Sungei Bahru	120,000	(105,000)	1,017,000	(1,073,000)	10
Sungei Chermang	222,000	(227,000)	1,526,000	(1,522,000)	7
Sungei Kahang	134,850	(158,500)	1,554,200	(1,501,700)	11
Tambira	103,800	(119,690)	806,370	(849,720)	7
Tamiang (Malaya)	82,000	(65,000)	304,000	(250,000)	4
Tanjong Malim	401,500	(361,940)	2,567,100	(2,204,230)	7
Sennah	143,000	(158,400)	143,000	(158,400)	1

* After deducting crops from estate(s) since sold.
† Including crop from Tuan Mee Estate.

SHARPE, ESTALL AND CO. LTD.

	Fin. year ends	January 1958 lb.		Fin. year to date lb.	
Anglo-Johore	July	68,150	(60,900)	365,300	(297,800)
Batang CRE	March	100,871	(88,000)	859,264	(700,000)
Bekoh CRE	March	224,000	(189,000)	2,050,000	(1,691,000)
KPRP	March	70,000	(65,000)	535,200	(445,300)
Rim (Malacca)	June	244,000	(197,000)	1,624,500	(1,301,200)
Sittang Valley	June	138,150	(153,090)	777,170	(904,200)
Kurunegala	Dec.	27,725	(32,470)	27,725	(32,470)

Rubber and Plastics Stock Market

A REVIEW OF PRICES AND TRENDS

THE undertone in share markets has become quite cheerful again, mainly because of the renewed strength of Wall Street, which as we go to Press is at yet another all-time high point. But for the election uncertainties there can be little doubt that London would also be poised at a new high today. As it is, there are still ample buyers around for leading industrials and it is increasingly noticeable that the institutions are prepared to support fixed interest stocks of the higher order.

Shares of the plastics and rubber manufacturers have once again advanced on a fairly broad front. There has been persistent buying of COURTAULDS and DUNLOP. The ordinary shares of the former have gained around 1s. to 34s. 3d., while the ordinary of Dunlop have been pushed up 2s. 6d. to 25s. 6d. In the stock market it is rumoured that buying of both shares is coming mainly from Wall Street and follows an outright recommendation by a broking firm. With Wall Street so high it is very easy to justify a purchase of leading British industrials by the American investor, in fact only one thing checks a flood of dollars coming into British shares, and that is, of course, the election.

With no supporting talk of American buying, IMPERIAL CHEMICAL ordinary managed to rise to 36s., a gain of 1s. 9d., while LEYLAND AND BIRMINGHAM RUBBER hit a new peak of 78s. FRANCIS SHAW ordinary encountered rather heavy buying and advanced from 14s. 10½d. to 18s., a new high, before falling back to 17s. 7½d. EBONITE CONTAINER were also a good market following the results and hit a high of 15s. 3d. before tapering off to 14s. 9d. The buying of P. B. COW on hopes of good results was maintained and the ordinary shares were lifted to a peak of 6s. 7½d. LONDON RUBBER, which has been several times mentioned in national circulation periodicals as a first-class investment, were again prominent with a lift of 1s. 3d. to 14s. 3d. after 14s. 4½d.

A warning on profit margins contained in the chairman's speech to shareholders was probably responsible for the price of BRITISH INDUSTRIAL PLASTICS ordinary shares remaining at around 7s. 3d. In his statement Mr E. R. Crammond told shareholders that sales for the current year to date have held up satisfactorily. He warns that smaller margins of profit must be expected, but then adds that the directors hope to combat this situation by increasing sales. The company is to continue its policy of expansion and it is proposed to extend activities within the plastics industry. In the year just ended the group capital expenditure amounted to nearly £500,000 and end-year capital commitments amounted to a further £175,000 compared with £234,000 a year previously.

Negotiations are in an advanced

Continued on page 335

Share Price Movements

Par Value	Company	1958-59 High	Low	Feb. 14	Latest
5/-	Albright & W. Ord. ..	21/3	13/4½	20/3	20/3
£1	,, ,, ,, 5% Pref...	16/7½	15/4½	16/6	16/3
5/-	Anchor Chemical Ord...	11/6	10/3	10/9	10/9
5/-	Andersons Rub. Ord. ..	4/3¼	3/-	3/1½	3/1½
2/-	Anglo-Amer. Vulc. Fibre Ord.	4/3	2/-	3/9	3/10½
£1	Angus Geo. Ord. ..	29/10½	21/-	28/1½	27/6
5/-	Armitage (Sir Elk.) Ord.	4/10½	2/3	4/-	4/6
5/-	Ault & Wiborg Ord. ..	12/10½	11/9	11/10½	12/9
5/-	,, ,, New Ord.	13/3	12/3	12/1½	13/-
£1	Avon India Rubber Ord.	42/-	27/-	36/3	36/10½
£1	,, ,, ,, 6% Pref.	18/6	17/3	17/6	17/6
10/-	Bakelite Ord.	23/3	17/-	22/9	22/9
£1	,, 6% Pref. ..	19/6	18/3	18/3	18/3
£1	Baker Perkins Ord. ..	45/7½	30/7½	45/-	45/-
4/-	Bank Bdg. Rubber Ord.	2/7½	1/6	2/-	2/-
5/-	Boake (A.) Roberts Ord.	18/6	9/-	13/-	13/-
£1	,, ,, ,, 5% Pref.	15/1½	13/9	13/9	13/9
4/-	Brammer H. Ord. ..	15/-	9/-	15/-	15/-
5/-	Bridge, David Ord. ..	27/9	16/3	26/6*	27/6
5/-	Bright, John Ord. ..	13/10½	8/9	10/-	11/-
2/-	Brit. Ind. Plas. Ord. ..	7/7½	4/9	7/3	7/3
2/-	,, 10% (tax free) Pref.	5/9	4/8¼	4/9*	4/9
£1	British Xylonite Ord. ..	50/6	28/6	48/9	49/9
£1	,, ,, 5% Pref.	15/6	14/-	14/9	14/9
5/-	BTR Ind. Ord.	13/3	9/4½	11/-	11/9
£1	,, ,, 7½% Pref. ..	22/6	20/9	22/6	22/6
£1	Courtaulds Ord... ..	35/-	20/-	33/3	34/3¾
£1	,, 5% 1st Pref.	18/6¾	15/7½	16/6	16/6
£1	,, 6% 2nd Pref.	19/6	17/1½	19/6	19/6
4/-	Cow, P. B. Ord. ..	6/7½	3/6	6/6	6/6¾
£1	,, 5% Pref. ..	13/6	10/9	12/6	13/3
5/-	Dale, John Ord... ..	15/-	10/-	11/-	10/6
£1	,, ,, 6% Pref. ..	15/10½	13/-	15/7½	15/7½
1/-	Dannimac Mfg. Ord. ..	6/2¼	2/6	5/10½	6/1½
10/-	De La Rue Ord. ..	33/3	20/9	32/-	32/1½
£1	,, ,, ,, 3½% Pref. ..	11/9	10/-	11/-	10/9
6/8	Distillers Co. Ord. ..	27/-	15/9	24/3	25/9
£1	,, ,, 6% Pref...	21/0¾	19/10½	20/-	21/-
£100	,, 5% Conv. Loan	£96½	£91	£93½	£93¼
£100	,, 5½% Unsec. Loan	£93½	£87 7/16	£93	£93
10/-	Dunlop Rubber Ord. ..	26/7½	14/9	23/-	25/6
£1	,, 5½% Pref.	18/9	15/10	17/3	17/3
£100	,, 3½% 1st Debs.	£73	£67¾	£72⅜	£72½
£100	,, 4½% 2nd Debs.	£82¾	£78	£79½	£82½

*Ex-dividend

Par Value	Company	1958-59 High	Low	Feb. 14	Latest
4/-	Ebonite Cont. Ord. ..	15/3	7/6	13/3	14/9
£1	English China Clays Ord.	54/-	29/9	50/7½	53/9
£1	Goodyear Tyre 4% Pref.	12/9	12/-	12/6	12/6
5/-	Greeff Chem. Ord. ..	17/9	14/-	16/6	16/9
10/-	,, ,, 5½% Pref...	8/-	7/9	8/-	8/-
4/-	Greengate & Irwell Ord.	7/0¾	4/9	5/3	6/-
1/-	Hunt & Moscrop Ord. ..	1/5	1/1½	1/3	1/3
£1	Imp. Chem Ord. ..	38/-	28/3	34/3	36/-
£1	,, ,, 5% Pref. ..	17/3	16/-	16/6	16/9
£100	,, 4½% Unsec. Loan	£88½	£80	£86	£88
£100	,, 5½% Conv. Loan	£121	£99	£117½	£117½
1/-	Kleemann (O. & M.) Ord.	5/5¼	2/6	5/1½	5/3
£1	,, ,, 6½% Pref.	16/9	15/-	16/-	16/6
2/-	Lacrinoid Prod. Ord. ..	2/5¼	1/5¾	1/6	2/4½
5/-	Laporte Ind. Ord. ..	20/7½	13/7½	20/3	19/9
£1	,, ,, 7½% Pref.	22/10½	21/10½	22/3	22/9
£1	Leyland & Birm. Rubber Ord.	78/-	41/-	73/9	77/6
£1	,, ,, 6% Pref.	21/3	16/1½	16/10½	16/10½
2/-	London Rubber ..	14/4½	8/6¾	13/-	14/3
£1	,, 6% Red. Cum. Pref.	19/9	16/3	18/9	18/9
£1	McKechnie Bros. Ord.	45/-	32/6	45/-	45/-
£1	,, ,, 'A' Ord.	44/6	30/-	42/6	42/6
£1	,, ,, 6% Cum. Pref.	16/3	16/-	16/3	16/3
5/-	Monsanto Chem. Ord. ..	16/4½	13/-	15/-	15/3
£1	,, ,, 3¾% Pref.	12/6	11/-	12/-	12/-
£100	,, 6% Debs.	£104	£101¼	£103	£103
£1	North British Rubber ..	—	—	15/3	15/3
2/-	RFD Ltd. Ord.	5/3	3/5¼	5/-	4/8½
£1	,, ,, 5½% Pref. ..	14/6	11/6	12/6	12/6
2/-	Rubber Imp. Ord. ..	15/-	6/-	6/-	7/-
2/-	,, ,, 'A' Ord.	15/-	6/-	6/-	7/-
£1	,, 5% 1st Pref.	12/3	10/-	10/-	10/6
5/-	Rubber Reg. Ord. ..	13/-	11/-	11/-	10/6
4/-	Shaw Francis Ord. ..	18/-	9/9	14/10½	17/7½
2/-	Silentbloc Ord.	—	—	8/-	8/-*
2/-	Sussex Rubber Ord. ..	1/8	7½	1/4½	1/4½
5/-	Sutcliffe Speak Ord. ..	7/4½	5/-	6/3*	6/3
£1	Turner & Newall Ord. ..	73/9	52/-	71/3	70/-
£1	,, ,, 7% Pref.	24/-	22/1½	23/9	23/3
5/-	Universal Asbestos Ord.	17/-	8/0¾	16/6	16/6
5/-	Viscose Dev. Ord. ..	10/7½	6/3	10/-	10/4½
5/-	Warne William (Holdgs.) (Ord.)	11/10½	8/-	11/-	11/-

†Ex-cap.

Rubber Markets

LONDON

There has been little change in conditions in the London rubber market during the past week. Business has been quiet and prices have again fluctuated within narrow limits to record little significant change on balance. Prices were sustained by reported Russian buying and a small factory demand. The Spot is virtually unaltered at 25⅞d. per lb.

Latest prices are as follows:

No. 1 RSS Spot: 25⅜d.-25½d.

Settlement House:

April 25½d.-25⅝d.

April/June 25⅝d.-25¾d.

July/September 25¾d.-25⅞d.

October/December 25⅞d.-26⅛d.

January/March 26d.-26¼d.

No. 1 RSS cif basis ports:

March 25¼d.-25½d.

April 25¼d.-25½d.

Godown:

March 85⅛ Straits cents nominal.

Latex

Centrifuged latex per gallon in drums, March/April shipment, 14s. 11d. seller, cif European ports. Spot, seller, 15s. 5d. Bulk, seller, 15s. 3d. Creamed, seller, 14s. 6d. Normal, seller, 11s. 4d.

SINGAPORE

With little change in overseas levels, the market opened unchanged on February 23 and ruled very quiet with only small interest. During the afternoon values eased slightly with some small factory interest noted at the lower levels. There were some enquiries for remills with exchanges small. The market closed dull. After-hours, quiet conditions prevailed.

	Straits cents per lb. fob Malayan ports to open ports	
	Close	Previous Close
No. 1 RSS, March	86⅜—86⅝	86⅜—87
April	87 —87¼	87¼—87½
No. 2 RSS March	84⅜—85⅛	85⅛—85⅜
No. 3 RSS, March	84¼—84⅜	84⅜—85
No. 4 RSS, March	83¼—83⅜	83⅜—84¼
No. 5 RSS, March	80⅜—81⅜	81 —82
No. 1 spot ..	85¼—85⅜	85⅜—86¼
No. 3 blanket, thick remilled, March	78¼—80½	78¼—80½
No. 1 fine pale crepe, March ..	89 —90	89½—90½
Tendency: Quiet		

Latex, native produce, 60% centrifugal, packed in rec. drums fob 165.20d. per gallon.

CEYLON

No. 1 RSS

The price for No. 1 RSS, spot, at Colombo on February 23 was 106 (106) Ceylon cents per lb.

NEW YORK

The following landed prices ruled in New York on February 24:

Dealers' Prices

	US cents per lb. Feb. 24	Previous
No. 1 RSS, Mar.	30¼b–30¼a	30¼b–30⅜a
Apr.	30¼b–30¼a	—
No. 2 RSS, Mar.	29⅞b–30a	29⅞b–30¼a
Apr.	29⅞b–30a	—
No. 3 RSS, Mar.	29½b–29⅞a	29½b–29⅞a
Apr.	29½b–30a	—
No. 1 RSS, Spot	30¼b–30¼a	30¼b–30⅜a
No. 3 amber blanket crepe, Mar.	28b–28¼a	—
No. 1 latex, thin crepe, Mar. ..	30¾n	—
No. 1 latex, thick crepe, Mar. ..	30¼n	—

Futures—Rex Contract

	US cents per lb. Close	Prev. Close
March ..	30.48t	30.28b–30.35a
May ..	30.50t	30.40t
July ..	30.50t	30.40t
Sept. ..	30.48t	30.35b–30.40a
Nov. ..	30.48b–30.50a	30.38b–30.42a
Jan. ..	30.48b–30.50a	30.38b–30.42a
March ..	30.50b–30.55a	30.40t
Sales: 39	Tendency: very steady	

Rubber futures were steady in light dealings on February 24. Traders said the steadiness abroad, and a steady undertone in physical rubber, helped the market. Physicals were routine, with shipment offerings modest, while factory and dealer interest continued light.

Crepe Rubber

The following prices ruled in New York on February 18:

Dealers' selling prices:	Cents per lb.
Sole crepe, standard grade 'A'	48 (48)
Thick crepe	32 (32)

AMSTERDAM

The Amsterdam rubber market ruled as follows on February 23:

	Guilders per kilo	
No. 1 RMA	Feb. 23	Prev.
February	2.46½	2.45
March	2.47	2.45
April	2.47	2.46
May	2.47½	2.46
June	2.48	2.46
April/June	2.48	2.47
July	2.48	2.48
August	2.48	2.48
September	2.49½	2.48
Sales: 30.	Tendency: Quiet.	

BANGKOK

Market closed on February 23.

DJAKARTA

An improvement in demand on February 23 brought a slightly firmer tendency. There was good demand for lower grades, but crepe was rather neglected. The close was quietly steady. Export certificates were quoted at 332 paid/buyer.

	Rupiahs per kilo Feb. 23	Prev.
Spot No. 1 Priok ..	22.40b	22.35b
Spot No. 2 Priok ..	21.60b	21.50b
Spot No. 3 Priok ..	20.10b	20.00b
No. 1 fine pale crepe ..	19.80b	19.80b
Tendency: Steady, quiet.		

STOCK MARKET

Continued from page 334

stage for 'BIP' to take a substantial stake in a newly-formed Dutch company. Mr Crammond points out that the effect of this new enterprise would be progressively to reduce the sales of the 'BIP' factories at Oldbury, but he adds that in the meantime the company has breathing space to develop other markets. The net profit, as already reported here, was £317,000 compared with £306,000 and the dividend was 20%.

Bank Bridge Rubber ordinary shares were a fairly stable market despite news that there is to be no dividend for the year ended October. This compares with the 5% paid last time. There is a net loss of £6,300 against a profit of nearly £10,000 after taxation of £5,000.

The directors of the George Cohen 600 Group are declaring an interim of 4½% on the ordinary shares. Last time this payment was followed by a final of 7½% which brought the year's payment up to 12%. In his interim statement to shareholders Mr Cyril Cohen, the chairman, warns that the directors are unable at this stage to forecast the rate of final dividend. The recommendation in this regard will be dependent on the outlook at the time it is made and on the results of the full year's trading. He continues: 'The fall in demand for capital plant of the type we manufacture and the reduced requirements for steel have adversely affected our trading in the current year. Consequently our profits are running at a substantially lower level compared with last year.' This news should not come as a great shock to shareholders as in his last full statement Mr Cohen warned of 'smaller profits' and 'more difficult trading conditions ahead.'

The final dividend of the Plastic Engineers concern is to be 10% which is double the rate of a year ago and brings the total up to 15% against only 5% last time. There has been a substantial recovery in profits. The trading figure comes out at £34,000 against barely £9,000 a year ago.

The Vulcanite group is paying a total dividend of 45% which is the same as a year ago. The net profit is nearly £7,000 higher at £36,000 after taxation of £30,000 against £29,000.

Synpol SR

Charles Page and Co. Ltd., of London, Manchester and Glasgow, have been appointed by The Texas–U.S. Chemical Company as sole agents for United Kingdom for the sale of synpol synthetic rubber and for butadiene.

Industry INTELLIGENCE

Technical Data

Polyvinyl Acetate Dispersions for Emulsion Paints

Bedacryl 288 is an unplasticized aqueous dispersion of polyvinyl acetate containing about 55% total solids while Bedacryl 388 is an aqueous dispersion of plasticized polyvinyl acetate containing 60% total solids. The use of these dispersions in the production of emulsion paints is described in an I.C.I. pamphlet in the Synthetic Resins series.

Bedacryls 288 and 388 have been prepared using special colloids on to which the polymer is grafted and which have a slower release of water than is normal for this type of product. When emulsion paints are prepared from these polyvinyl acetate dispersions, it is found that the amount of added thickener used in the paint may be smaller than is usually necessary to give good brushing properties and superior covering power. The slower drying of paints based on Bedacryls 288 and 388 in the early stages after application is advantageous in improving flow and, in view of the longer time available for film integration, the sheen obtainable from these paints is greater than that normally expected from polyvinyl acetate dispersions. The procedure for preparing emulsion paints from Bedacryls 288 and 388 is described and formulations are given for matt, eggshell, semi-gloss and glossy white emulsion paints.

Vinalak Polymer Solutions

The Vinalaks are highly concentrated solutions of unplasticized synthetic resins in organic solvents. They are manufactured by solvent polymerization which permits greater uniformity than can be achieved by dissolving solid resins in solvents. On account of the relatively low molecular weight of the resins, the solutions dry to heavier coatings than are normally obtainable from resins produced by other methods of polymerization. The properties and uses of Vinalak polymer solutions are summarized in an introductory leaflet, while detailed information on their properties, plasticization, storage and handling is given in a series of technical data sheets issued by Vinyl Products Ltd., Carshalton, Surrey.

The synthetic resins used in the production of Vinalak solutions are of four types. These types are listed below, together with the number of standard grades of each type (in brackets): Polyvinyl acetate (6), vinyl acetate-vinyl caprate copolymers (2), polymethacrylates including methyl methacrylate-butyl methacrylate copolymer (10) and polystyrene (1). The various types and grades differ in regard to the chemical nature, molecular weight and concentration of the resin, and the solvents in which the resins are polymerized. Vinalak polymer solutions are water-white to pale straw colour and are of low to medium viscosity. The solutions can be modified for application by brushing, dipping and roller coating, and can be sprayed at relatively high solids content. Their drying properties may be varied within wide limits by diluting the solutions with a variety of solvents.

The films deposited from the solutions are continuous, glossy and water-white, and have excellent mechanical properties. They are odourless, tasteless and non-toxic. The resins are resistant to sunlight, oxidation, ageing and microbial attack, and are unaffected by water, acids and alkalis. The solubility of the resins varies but all are soluble in esters and ketones, the lower aromatic hydrocarbons and many chlorinated hydrocarbons. The solutions are easily pigmented or filled and many natural or synthetic resins can be added to modify the physical characteristics of the films.

The Vinalaks are widely used in the manufacture of clear and pigmented paints and lacquers, and as adhesives. They are also used in paper coating and textile finishing and in the manufacture of printing inks for use on various thermoplastic films and ceramics.

Machines, Materials and Equipment

Mobiltemp Grease No. 1

A non-soap type grease, Mobiltemp Grease No. 1, is being produced by the Mobil Oil Co. Ltd. It is specially designed to cater for the lubrication of plain and anti-friction bearings operating in the 250°F. to 500°F. temperature range. This new grease, the manufacturers claim, does not melt under the application of heat and has no drop point in the normal sense of the term. Its consistency does not change materially under conditions of working or temperature cycling.

Lightweight Hoist

A small hoist unit now being made by Haltrac Ltd., Weimar Street, London, S.W.15, weighs only 1lb. and has a lifting capacity of 1,000lb. It consists of two sets of multiple pulleys coupled through seven strands of nylon cord between which the load is distributed. The pulleys are made of self-lubricating nylon and are mounted in rustproofed housings which incorporate hinged, self-locking hooks. The hooks of each pulley assembly can be used either to sling the hoist or to carry the load, and the 75ft. of nylon cord gives the unit a useful working range.

Drum Opening Tool

Not previously available in this country, and now being manufactured here, the drum opening tool, manufactured by Powell and Co., Burry Port, Carms, South Wales, is designed to remove heads from steel drums, which, the makers claim, it does quickly and cleanly even in the case of heavy gauge material. An important safety feature is that a clean cut without dangerous, ragged edges is made close to the inside edge of the drum and of course the clumsy habit of using a hammer and chisel is obviated. The special cutter blade is drop forged and heat treated and is detachable for occasional sharpening or replacement.

Publications Received

Roto-Finish and Precision Barrelling

The first issue of the news-sheet of Roto-Finish Ltd., *Roto-Finish Record*, contains an account of the company's advancement since its inception in 1947 and outlines its products and ramifications. It also includes a description of the company's electropolishing processes.

New Du Pont Plastic

The December/January issue of the Du Pont Magazine contains an account of the properties and applications of the Organization's new plastic 'Delrin' acetal resin. It also includes a number of other interesting items including those on nylon tyres and plastic arteries in surgery.

Vanderbilt News

A number of interesting features on different aspects of rubber compounding, etc., appear in the November/December issue of 'The Vanderbilt News'. These include: Major Commercial Rubbers and Properties; Classification of Compounding Materials; and Compound Development, etc. The booklet contains much useful data in tabular form.

Peco Products

The organ of the Projectile and Engineering Co. Ltd., London, S.W.8, 'Peco Products Quarterly' for December, is mainly devoted to a speed analysis of the Peco 30MS30 4½-6oz. injection moulding machine. It also contains a brief review of 'Peco' activities.

COMPANIES in the NEWS

Anchor Chemical Co. Ltd.

A meeting of the directors of the Anchor Chemical Co. Ltd. to consider the provisional accounts for the year ended November 30 1958 was held on February 23. In its preliminary statement, the board states that consolidated profit on trading, adjusted for all revenue items in profit and loss account including non-recurring income of £7,350, was £140,413, which compares with £122,152. The directors recommend a final ordinary dividend of 12½%, less tax.

Monsanto Chemicals

At a meeting held on February 24 a second interim dividend was declared on the company's ordinary shares of 8¼% (5.1d. per 5s. share) less income tax, making the total dividend 13½% on the ordinary capital in respect of 1958, the same as for 1957. No further distribution will be recommended in respect of 1958.

Net sales for 1958 amounted to £15,426,633 (£15,683,272). Group consolidated net profit of the company and its subsidiaries after taxation was £992,415 (£1,078,557). The value of goods sold in 1958 amounted to £15,426,633 (£15,683,272 in the previous year). Direct export business accounted for 35% of total sales, a contribution of £5,429,222 to the turnover, albeit at lower profit margins than before.

Revertex Ltd.

A preliminary announcement by Revertex Ltd. states that profit for the year to September 30 1958, after all charges including taxation, was £178,373, compared with £190,975. The directors recommend a final dividend of 17½%, which, with the interim of 12% paid on November 14 1958, makes 30% for the year on £453,750 ordinary capital.

British Industrial Plastics

During the year to September 30 1958, group capital expenditure of British Industrial Plastics Ltd. amounted to over £490,000, and commitments at that date totalled £175,250 (£234,000), according to the chairman, Mr E. R. Crammond.

As to the immediate future, sales for the current financial year to date have held up satisfactorily, but smaller margins of profit must be expected. Regarding the formation of a new company jointly with the Dutch concern Algemene Kunstzijde Unie, N.V., negotiations for which are in an advanced stage, Mr Crammond states that it is proposed BIP should have a substantial holding, but not a controlling one, in the new Dutch company which it is intended should erect a factory for the manufacture of urea formaldehyde and melamine formaldehyde moulding powders and resins to supply the needs of the European Economic Community. The effect of such a company would be progressively to reduce the sales of the products of the BIP chemical factories at Oldbury to the countries in the EEC. Group net profit is £317,508 (£306,073), and the dividend is 20% (same), of which the 12½% final is on an enlarged capital.

Future Events

INSTITUTION OF THE RUBBER INDUSTRY

Merseyside Section. — Saturday March 7. Dinner dance at Reeces, Parker Street, Liverpool.

North-Eastern Section. — Monday March 2 at the Eldon Grill, Grey Street, Newcastle, at 7 p.m. 'Method Study and Work Measurement' by Mr S. F. McKee, Dunlop Rubber Co. Ltd. In the chair, Mr G. W. Loosemore, A.I.R.I., A.P.I., A.N.C.R.T., chairman of the section.

Preston Section.—Monday March 2 at the Bull and Royal Hotel, Preston, at 7.15 p.m. 'Safety in the Rubber Industry' by Mr J. Stopforth, A.I.R.I., Leyland and Birmingham Rubber Co. Ltd. In the chair, Mr R. Redman, chairman of the section.

Leicester Section.—Monday March 2 at the Grand Hotel, Leicester, at 6.45 p.m. 'Recent Developments in the Use of Plastics and Rubbers in the Boot and Shoe Industry,' by Mr A. J. Bunten, M.A., SATRA.

PLASTICS INSTITUTE

North-Western Section. — Friday March 6 at the Textile Institute, Blackfriars Street, Manchester, at 6.45 p.m. 'The Manufacture and Uses of Stelvetite,' J. Summers Ltd.

Southern Section. — Thursday March 5 in the Chemistry Department, University of Southampton, at 7.30 p.m. 'Plastics in the Building Industry,' by D. B. Honeyborne, DSIR.

Society of Chemical Industry, Plastics and Polymer Group. — Tuesday March 3 at the SCI Meeting Room, 14 Belgrave Square, London, S.W.1, at 6.30 p.m. 'Aspects of Polymer Fractionation,' by Dr J. H. Green, DSIR Chemical Research Laboratories.

Dunlop's Safety Record

One hour lost for every 173,000 hours worked, was the accident prevention record at Fort Dunlop during 1958. Winners of the Gold Cup awarded annually by the City Livery Company are the Crude Material Stores and Internal Transport Services, which handle over 150,000 tons of crude materials each year and cover more than one million miles in and around the factory. 'No Accident' certificates have been awarded to one group of departments which has now completed 44 months without an accident, and to the 102 apprentices at the factory who have been without one for 29 months.

Shell 'Cariflex' Synthetic Rubbers

'Cariflex' styrene-butadiene rubbers manufactured by the Shell Chemical Co. Ltd. are now being marketed in this country. Prices have been finalized and are as follows in pence per lb.:

Cariflex (Shell Chemical Company)	(e-sUK)
S-1000 Hot	22.0
S-1002 „	23.375
S-1006 „	22.0
S-1009 „	24.0
S-1011 „	24.0
S-1013 „	24.0
S-1100 Hot/black	19.75
S-1500 Cold	22.0
S-1502 „	22.0
S-1600 Cold/black	19.625
S-1602 „ „	19.625
S-1605 „ „	19.375
S-1703 Cold, Oil-Extended	20.25
S-1706 „ „	20.0
S-1707 „ „	17.75
S-1709 „ „	17.5
S-1712 „ „	17.5
S-1803 Cold, Oil/Black Masterbatch	17.875
S-1804 Cold, Oil/Black Masterbatch	19.25

TRADE MARKS

Objections to the registration of any of the undermentioned applications may be lodged with the Comptroller-General of Patents, Designs and Trade Marks at the Patent Office, 25 Southampton Buildings, Chancery Lane, London, W.C.2, within one month of the date mentioned. The objections must be stated on Trade Marks Form No. 7, cost £2, obtainable through any money order office. The extracts—from "The Trade Marks Journal"—given below are reproduced by permission of the Controller of H.M. Stationery Office.

MOPLEN (776,689). For parts of installations for lighting, heating, steam generating, cooking, cooling, drying, ventilating, water supply and sanitary purposes, all being goods included in Class 11, made from polypropylene resin plastics. By Montecatini Società Generale per l'Industria Mineraria e Chimica, 18 Via Filippo Turati, Milan, Italy. Address for service is c/o Eric Potter and Clarkson, 317 High Holborn, London, W.C.1. To be associated with No. 776,685 (4191, 1126) and another. (Class 11; January 28 1959.)

KOWLAYS (783,174). For mattresses. By Farm Plastics Ltd., 22 Castle Street, Buckingham, Buckinghamshire. (Class 20; January 28 1958.)

CONOLITE (778,251) For laminations of plastics in sheet form and included in Class 17. By the Continental Can Co. Inc., 100 East 42nd Street, New York, State of New York, United States. Address for service is c/o Frank B. Dehn and Co., Kingsway House, 103 Kingsway, London, W.C.2. (Class 17; February 4 1959.)

CRESTILETTE (783,065) For material in sheet form and included in Class 17 made of baize coated or impregnated with plastics, the plastics predominating. By Jas. Williamson

and Son Ltd., Lune Mills, Lancaster. To be associated with No. 778,591 (4195, 1242). (Class 17; February 4 1959.)

GLAMOTEX (777,352) For shaped covers made of foamed plastics, for tables (furniture). By Cecil John Taylor, Carlisle House, Chatsworth Square, Carlisle, Cumberland. To be associated with No. 777,355 (4204, 144). (Class 20; February 4 1959.)

GLAMO (777,355) For cleaning and dusting cloths, brooms, mops; and shaped covers made of foamed plastics and being fittings for ironing boards. By Cecil John Taylor, Carlisle House, Chatsworth Square, Carlisle, Cumberland. To be associated with No. 777,352 (4204, 143) and another. (Class 21; February 4 1959.)

(778,833) For parts and fittings included in Class 12 for land vehicles, for watercraft, for aircraft and for apparatus for locomotion by land and water; and shaped coverings made of plastics for these goods. By Bluemel Brothers Ltd., Wolston, near Coventry. To be associated with No. 191,755 (933, 157) and others. (Class 12; February 11 1959.)

PILLOPRENE (788,028) For all goods included in Class 16 made of plastics. By Jobro Ltd., Clifton House, 83-117 Euston Road, London, N.W.1. To be associated with No. 763,216 (416,553) and others. (Class 14; February 11 1959.)

DILEC (783,212) For material in strip form made principally of plastics and included in Class 17. By John Gosheron and Co. Ltd., 79-81 Albert Embankment, Vauxhall, London, S.E.11. To be associated with No. 757,837 (4089, 1161). (Class 17; February 11 1959.)

NEW COMPANIES

C.I.O. Installations (Overseas) Ltd. (618,754).—January 12. Capital: £100 in £1 shares. To carry on the business of manufacturers, assemblers and repairers of and dealers in and technical consultants for machinery for and processes used in connection with the electronic, plastic, chemical and textile industries, etc. The subscribers (each with one share) are: Mrs. G. L. Orr and Miss Paula Freeman, both of 9 Cavendish Square, London, W.1. The first directors are to be appointed by the subscribers. Regd. office: 9 Cavendish Square, London, W.1.

Zenith Plastics Ltd. (618,722). — January 12. Capital: £100 in £1 shares. To carry on the business of manufacturers, prefabricators, producers, importers and exporters of, agents for and dealers in plastics and plastic substances, etc. The directors are: John R. Scarborow, 25 Brighton Road, Addlestone, Surrey. Oscar F. Janke, 136 Peembridge Place, London, W.2.

F. and M. C. Brown Ltd. (618,738). —January 12. Capital: £100 in £1 shares. To carry on the business of manufacturers of and dealers in plastic, modelling and moulding materials, etc. The directors are: Frank Brown, Southlea Farm, Datchett, Bucks.; Michael C. Brown and Gwyneth A. Brown, both of Boxwood, Woollens Brook, Hoddesdon, Herts. The first two named are directors of Frank Brown (Timber) Ltd. Regd. office: Messrs. Caldwell and Braham, St. Stephen's House, London, S.W.1.

M.G. Plastics Ltd. (618,853). — January 14. Capital: £1,000 in 2s. shares. To carry on the business of designers, manufacturers, importers and exporters of and wholesale and retail dealers in reinforced components and all kinds of plastic articles, etc. The directors are: John Milligan, 21 Shirley Crescent, Norbreck, Blackpool; John D. Gorick, Dolphin House, Pedders Lane, Ashton, Preston; Robert L. Gorick, 21 Parklands Drive, Fulwood, Preston; all directors of Terrazzite Ltd. Regd. office: 19 Mincing Lane, Blackburn.

Vulcan Plastics Ltd. (619,055).— January 16. Capital: £1,000 in £1 shares. To carry on the business of manufacturers of and dealers in plastic materials, plastic articles, fibre glass and lead extrusions, etc. The directors are: Leslie Palmer, 95 Beechwood Road, Sanderstead, Surrey; Lillian E. Collin, 101 Waddon Park Avenue, Croydon, Surrey. Regd. office: 128 George Street, Croydon, Surrey.

Technical Mouldings Ltd. (619,173). —January 20. Capital: £2,000 in £1 shares. To manufacture all kinds of goods, vehicles, boats, ships and aircraft, or any components thereof, and the manufacture of all kinds of machinery and tools from plastics, including reinforced plastics, etc. The permanent directors are: John M. Histead, 14 Glamis Way, Calcot, Reading; Reginald C. Pettey, 56 South View Avenue, Caversham, Reading, directors of Technical Design and Tool Co. (Reading) Ltd., etc.; Reginald List, 107 Nine Mile Ride, Finchampstead, Berks. Regd. office: 76 South Street, Reading.

Increases of Capital

Plextrude Ltd. (476,353), plastic manufacturers, etc., of Murrells Lane, Frimley, Camberley, Surrey. — Increased by £1,000 in £1 ordinary shares, beyond the registered capital of £3,000.

Rubber Journal and International Plastics **CLASSIFIED ADVERTISEMENTS**

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